treatment with 2% NaOH (12.0 l, 20.0 hrs), washing (12.0 l H_2O, 20 hrs). For 100 g AN-18: swelling in 5% HCl (0.5 l), treatment with 5% HCl (6.0 l, 10.0 hrs), washing (6.0 l H_2O, 10.0 hrs), treatment with 2% NaOH (15.0 l, 25 hrs), washing (16.2 l H_2O, 27.0 hrs). The chemical stability of ionites was determined by measuring the content of oxidizable substances in 100 ml of distilled water which had been in contact with the ionite for 24 hrs. The values (mg O_2/g ionite) before and after purification were as follows: for KU-2 1.91, and 0.177, respectively; for AV-17 1.92 and 0.06, respectively; for AN-18 0.64 and 0.19, respectively. There are 4 tables and 9 references: 6 Soviet and 3 non-Soviet. The three references to English-language publications read as follows: H. L. Segal, H. Hodge, I. S. Watson, W. T. Merle, Gastroenterology, 4, 484 (1945); A. C. Müller, Ind. Eng. Chem., no. 10, 1254 (1959); J. Thompson, A. C. Reents, Ind. Eng. Chem., no. 10, 1259 (1959).

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(TISSUE CULTURE)
(KIDNEY)

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[Hygiene and toxicology of major insecticides and fungicides used in agriculture especially in cotton growing] Gigiena i toksikologiia vazhneishikh insektofungitsidov, primeniaemykh v sel'skom khoziaistve, glavnym obrazom v khlopkovodstve. Tashkent, Gos.med.izd-vo M-va zdravookhraneniia UzSSR, 1961. 59 p. (MIRA 14:12)

(Insecticides) (Fungicides)

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Respiratory disorders with signs of tuberculous intoxication.
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resp. disord. in toxic stages (Rus))

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Cyanoethylation of hexamethylenediamine. Zhur.ob.khim. 32 no.7:2314-2316 Jl '62. (MIRA 15:7)

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1. Koryukovskaya fabrika tekhnicheskikh bumag.
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Erecting reinforced concrete supports with rigid cross pieces.
Transp. stroi. 8 no.10:30 O '58. (MIRA 11:11)
(Electric lines--Poles) (Precast concrete construction)

FEDOTOVSKIY, M.F.

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1. Instruktor Rostovskoy normativno-issledovatel'skoy stantsii Orgtransstroya.
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(Plants--Collection and preservation)

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[Recommendations on the development and utilization of standard calculations for piecework assignments in construction of apartment houses according to standard plans]Rekomendatsii po razrabotke i primeneniiu tipovykh kal'kuliatsii dlia akkordnykh nariadov pri stroitel'stve zhilykh zdanii po tipovym proektam. Moskva, Gosstroiizdat, 1962. 129 p. (MIRA 15:12)

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(Mushrooms)

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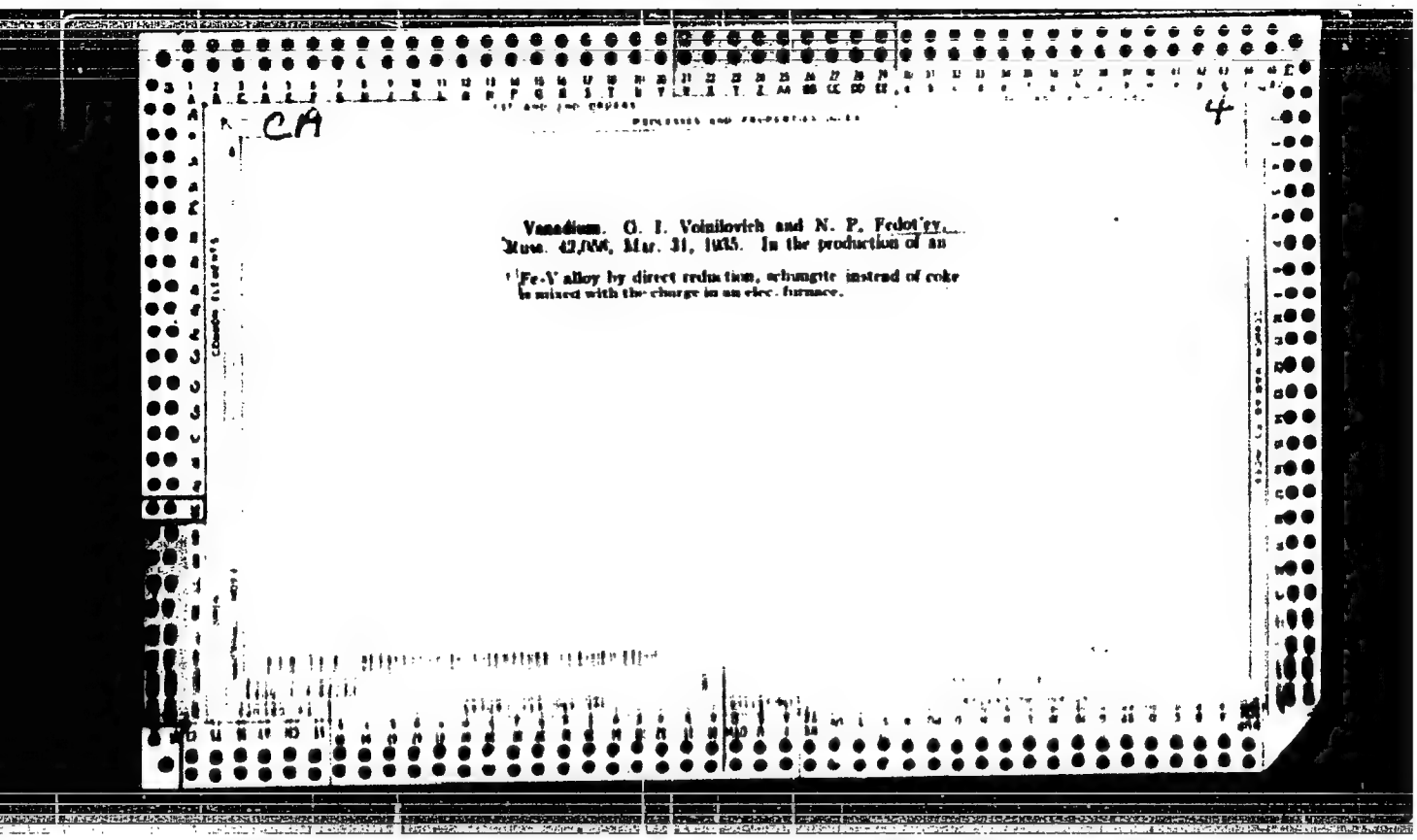
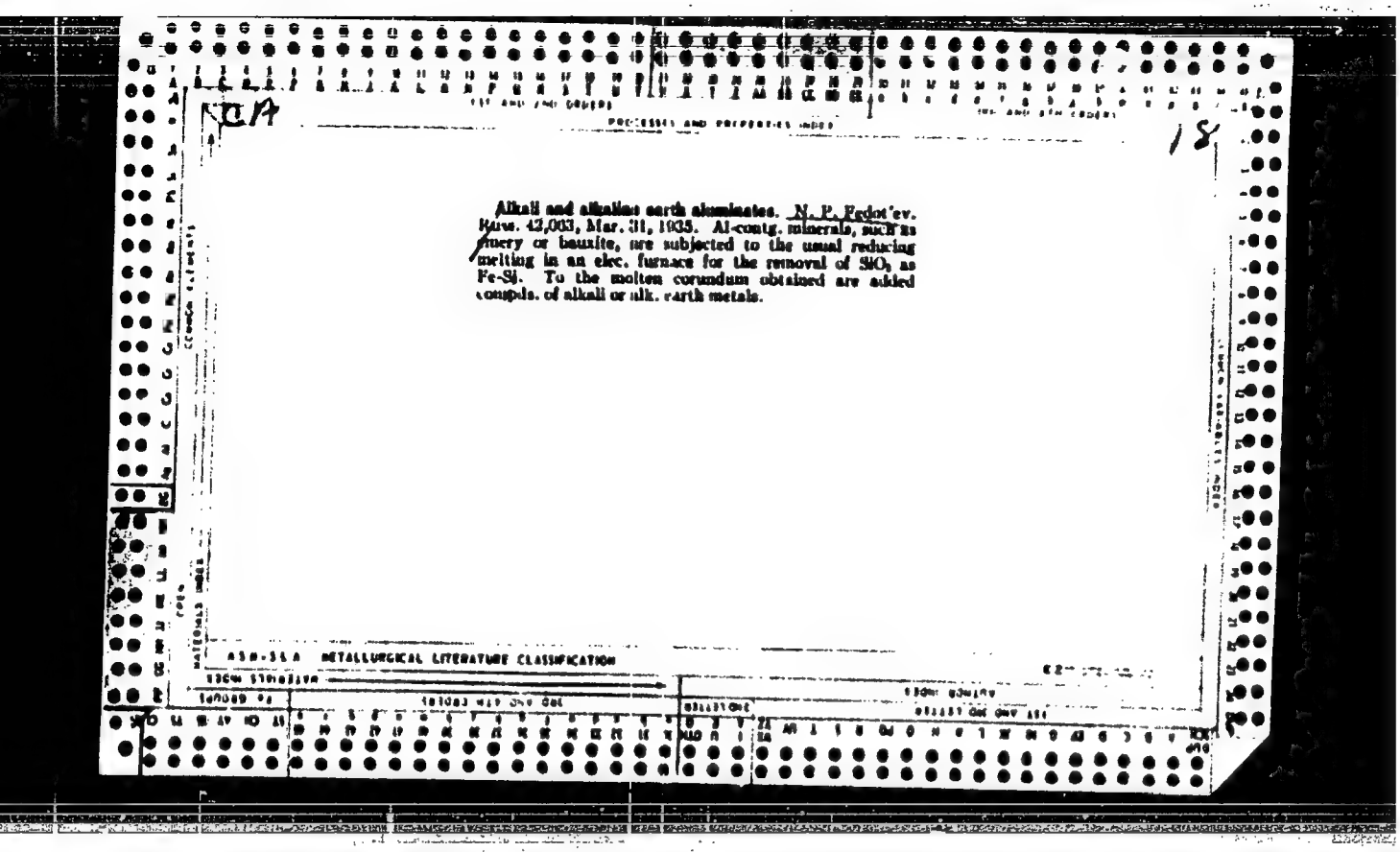
(Molybdenum)



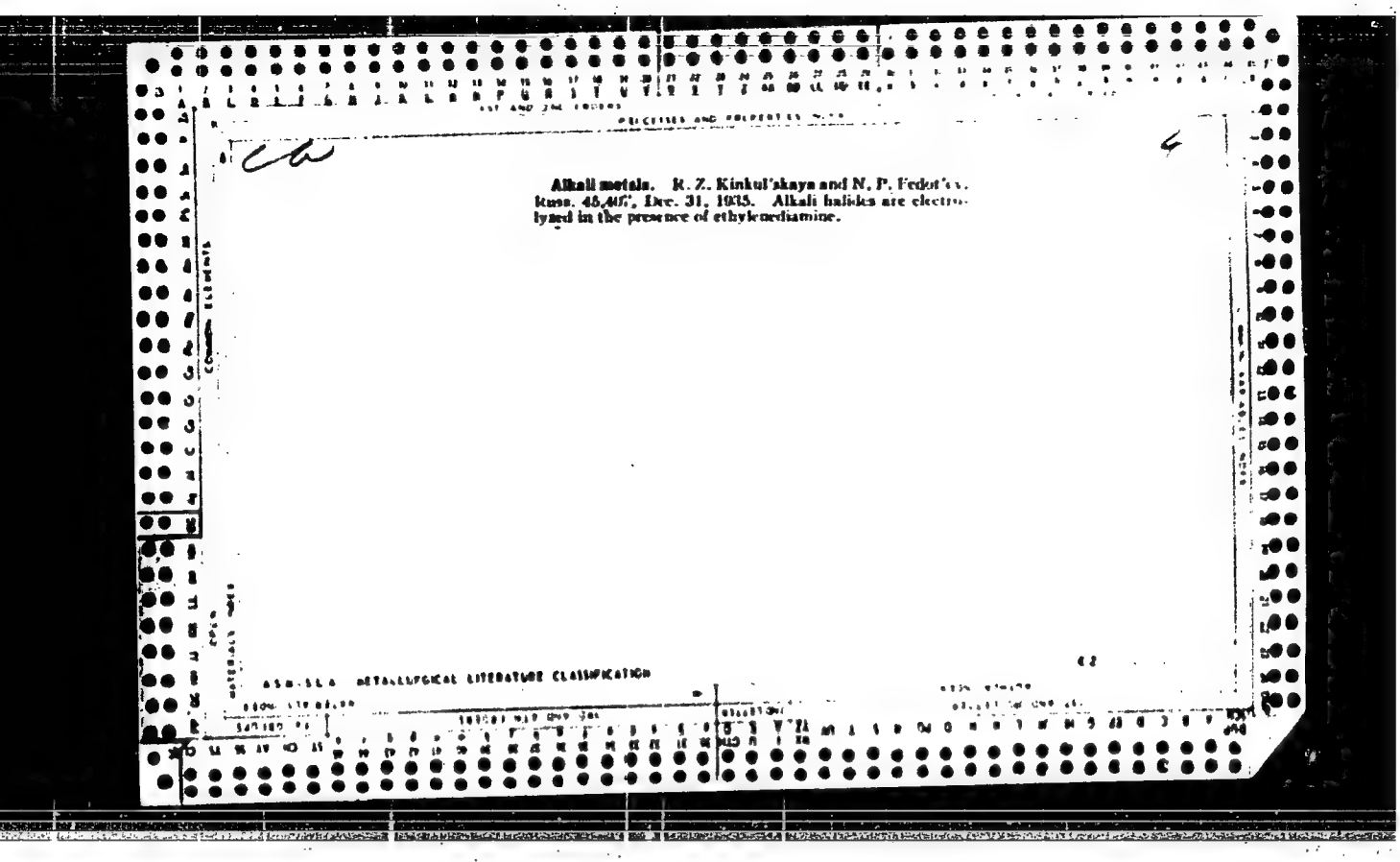
CA

4

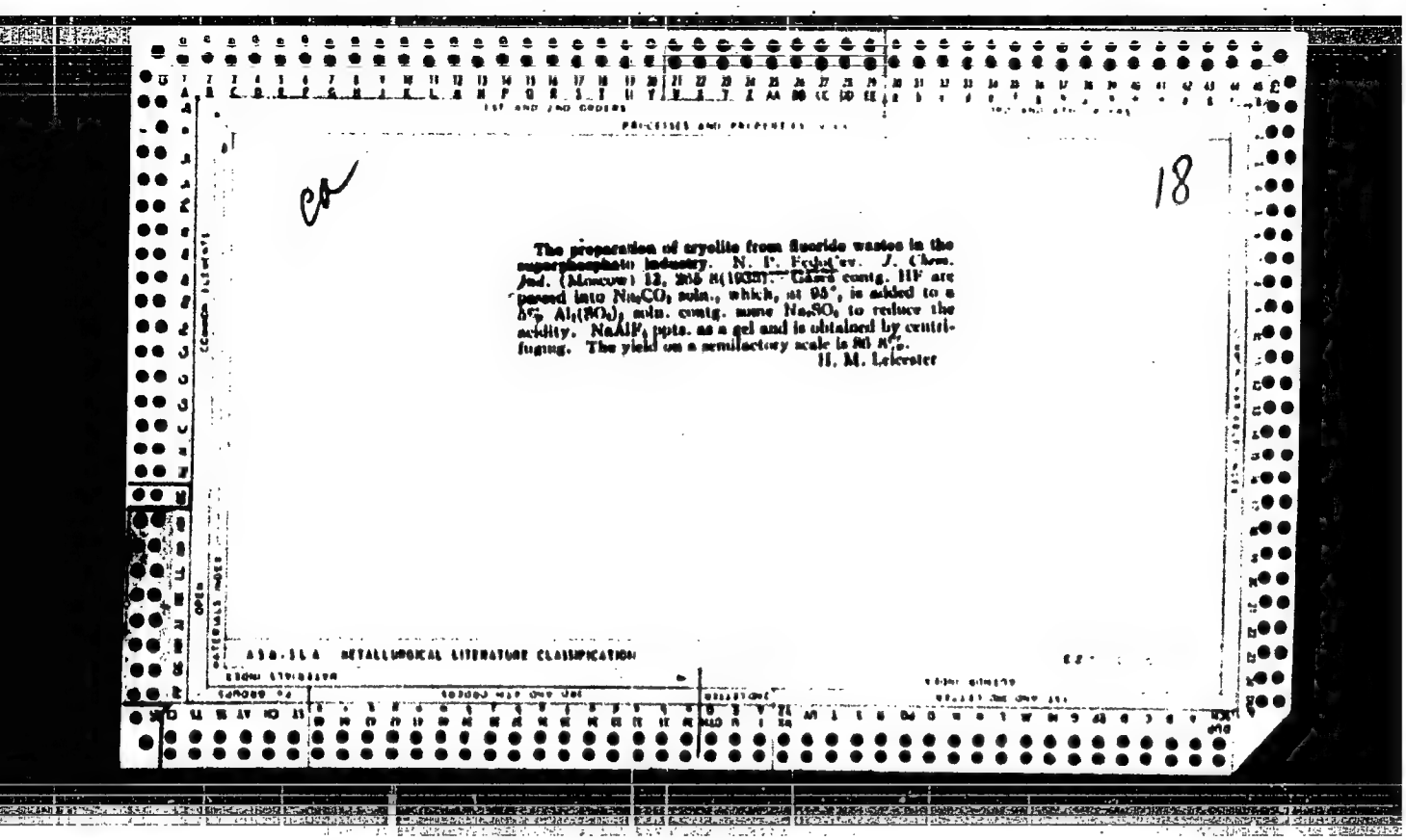
Vanadium. O. I. Voinilovich and N. P. Fedot'ev. Russ. 42,056, Mar. 31, 1935. In the production of an Fe-V alloy by direct reduction, schungite instead of coke is mixed with the charge in an elec. furnace.



Alkali and alkaline earth aluminates. N. P. Fedot'ev. Russ. 42,003, Mar. 31, 1935. Al-contg. minerals, such as emery or bauxite, are subjected to the usual reducing melting in an elec. furnace for the removal of SiO_2 as Fe-Si. To the molten corundum obtained are added compds. of alkali or alk. earth metals.



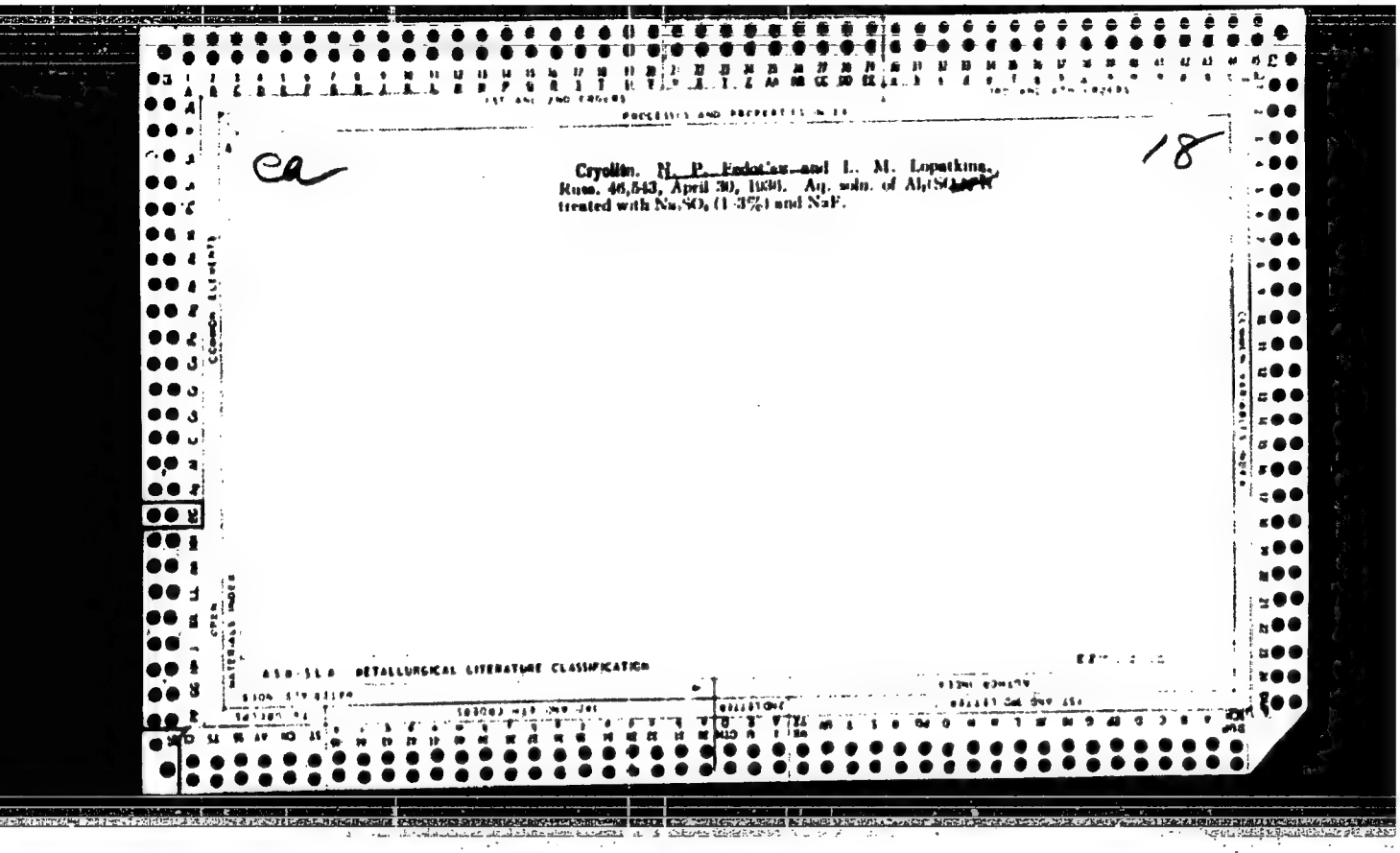
Alkali metals. R. Z. Kinkul'skaya and N. P. Fedot'ev. Russ. 45,407, Dec. 31, 1935. Alkali halides are electrolyzed in the presence of ethylenediamine.



18

The preparation of cryolite from fluoride wastes in the superphosphate industry. N. P. Fedot'ev. *J. Chem. Ind.* (Moscow) 13, 205 ff(1933). Gases contg. HF are passed into Na_2CO_3 soln., which, at 95°, is added to a 6% $Al_2(SO_4)_3$ soln. contg. some Na_2SO_4 to reduce the acidity. Na_3AlF_6 ppts. as a gel and is obtained by centrifuging. The yield on a semifactory scale is 80 %.

H. M. Leicester



ca

18

Cryolite. N. P. Fedotiev and L. M. Lopatkina. Russ. 46,843, April 30, 1936. Aq. soln. of $Al_2(SO_4)_3$ treated with Na_2SO_4 (1–3%) and NaF.

METALLURGICAL LITERATURE CLASSIFICATION

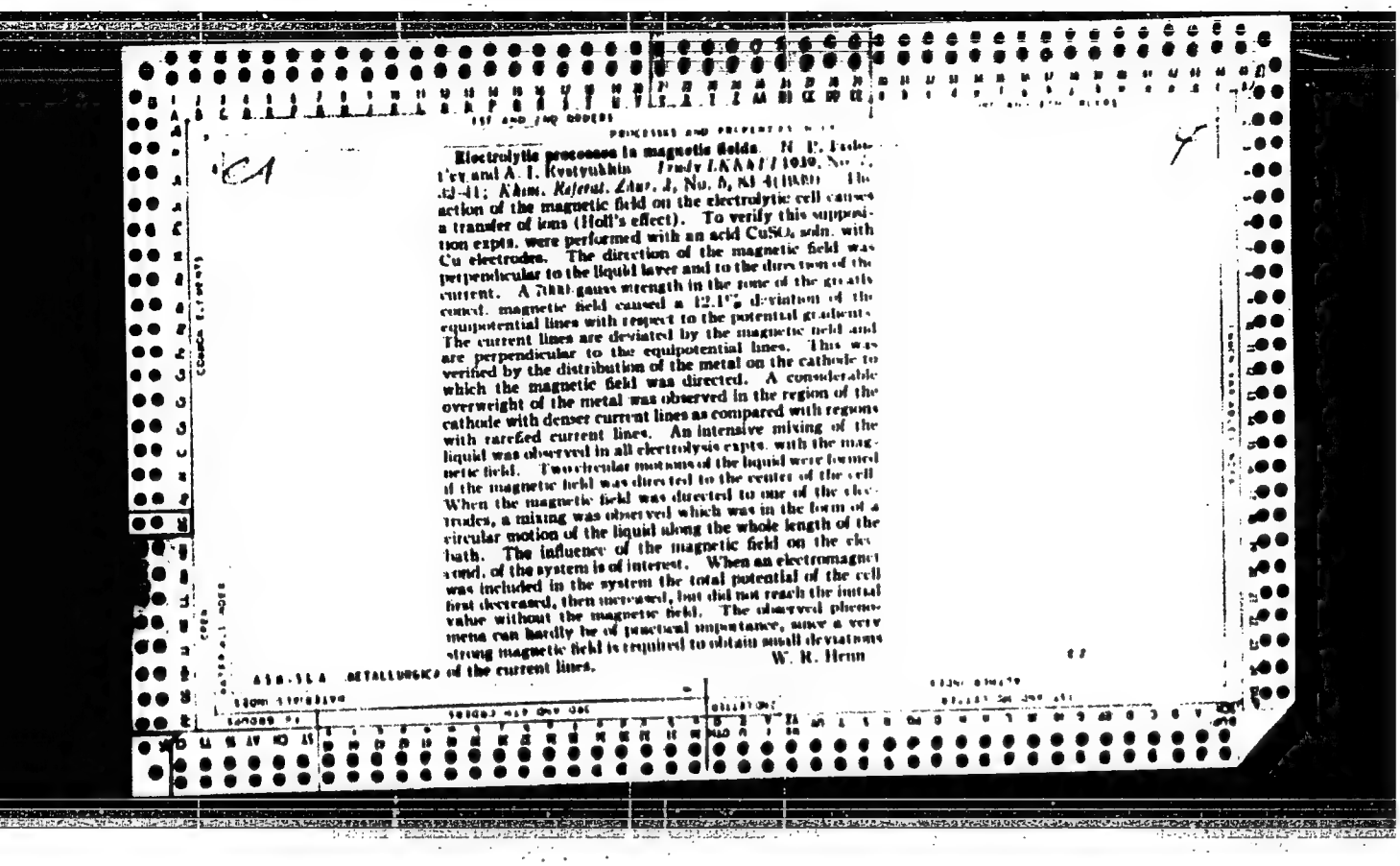
PROCESSES AND PROPERTIES INDEX

Ca

4

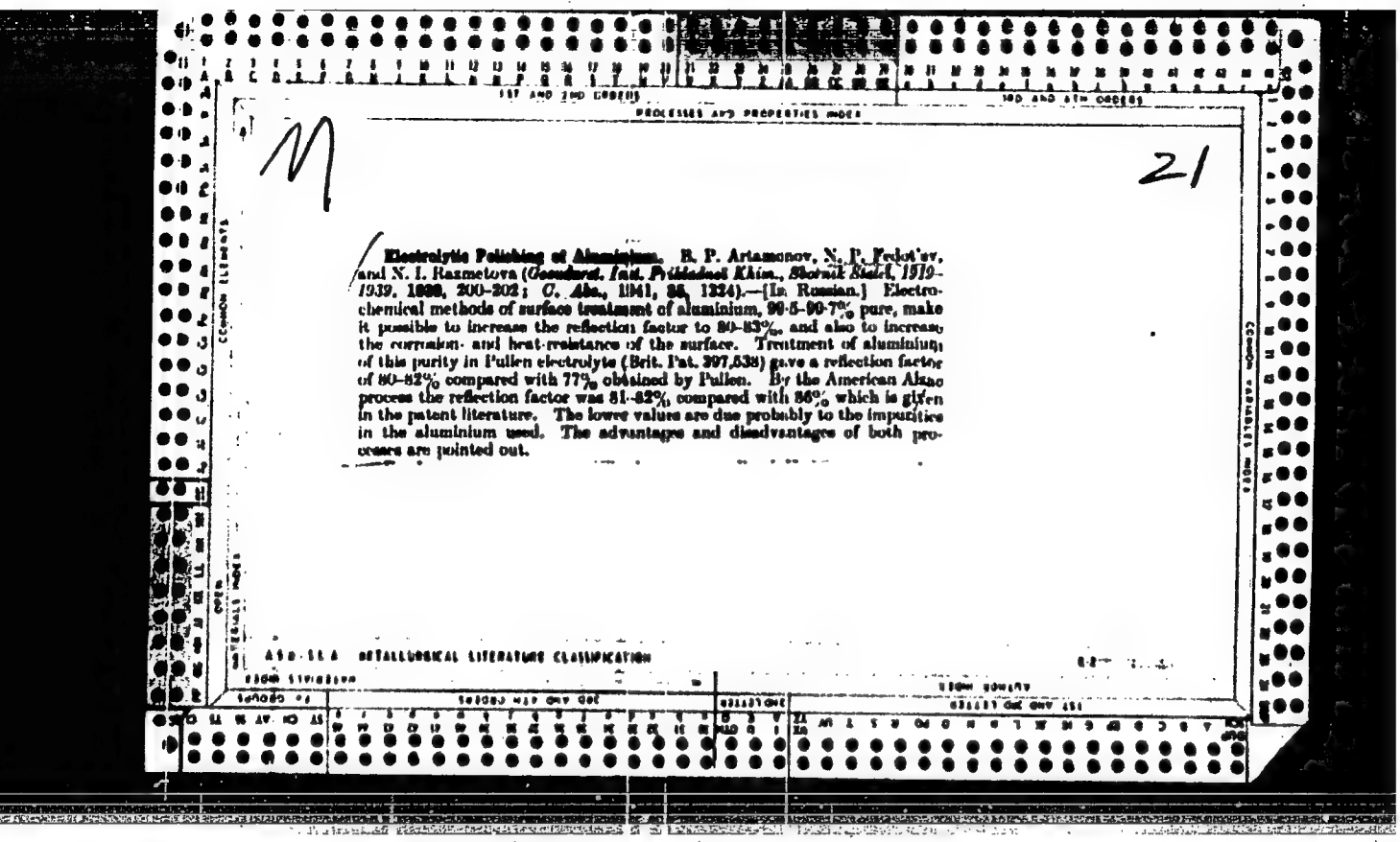
The electrolytic preparation of cuprous oxide. N. P. Fedot'ev and R. N. Kuskol'skaya. *J. Appl. Chem. (U. S. S. R.)* **15**, 41 (1939). Cu_2O is best prepd. by electrolyzing a soln. contg. 200-300 g./l. NaCl and 4-5 g./l. NaOH with Cu electrodes at 50-60° and a c. d. of 1-1.5 amp./sq. dm. The electrolyte should be stirred and the current reversed periodically. Since the concn. of NaCl affects the anode potential, Cu_2O is not formed directly on the anode. Probably $NaCuCl_2$ is formed first and reacts with NaOH to give Cu_2O. H. M. Leicester

A S M - S L A METALLURGICAL LITERATURE CLASSIFICATION



Electrolytic processes in magnetic fields. N. P. Fedot'ev and A. I. Kvatyukhin. *Trudy LKKhT* 7 1010, No. [illegible] 33–41; *Khim. Referat. Zhur.*, 3, No. 5, 83–4(1940). The action of the magnetic field on the electrolytic cell causes a transfer of ions (Hoff's effect). To verify this supposition expts. were performed with an acid $CuSO_4$ soln. with Cu electrodes. The direction of the magnetic field was perpendicular to the liquid layer and to the direction of the current. A 7000-gauss strength in the zone of the greatest concd. magnetic field caused a 12.1% deviation of the equipotential lines with respect to the potential gradients. The current lines are deviated by the magnetic field and are perpendicular to the equipotential lines. This was verified by the distribution of the metal on the cathode to which the magnetic field was directed. A considerable overweight of the metal was observed in the region of the cathode with denser current lines as compared with regions with rarefied current lines. An intensive mixing of the liquid was observed in all electrolysis expts. with the magnetic field. Two circular motions of the liquid were formed if the magnetic field was directed to the center of the cell. When the magnetic field was directed to one of the electrodes, a mixing was observed which was in the form of a circular motion of the liquid along the whole length of the bath. The influence of the magnetic field on the electromagnet. cond. of the system is of interest. When an electromagnet was included in the system the total potential of the cell first decreased, then increased, but did not reach the initial value without the magnetic field. The observed phenomena can hardly be of practical importance, since a very strong magnetic field is required to obtain small deviations of the current lines.

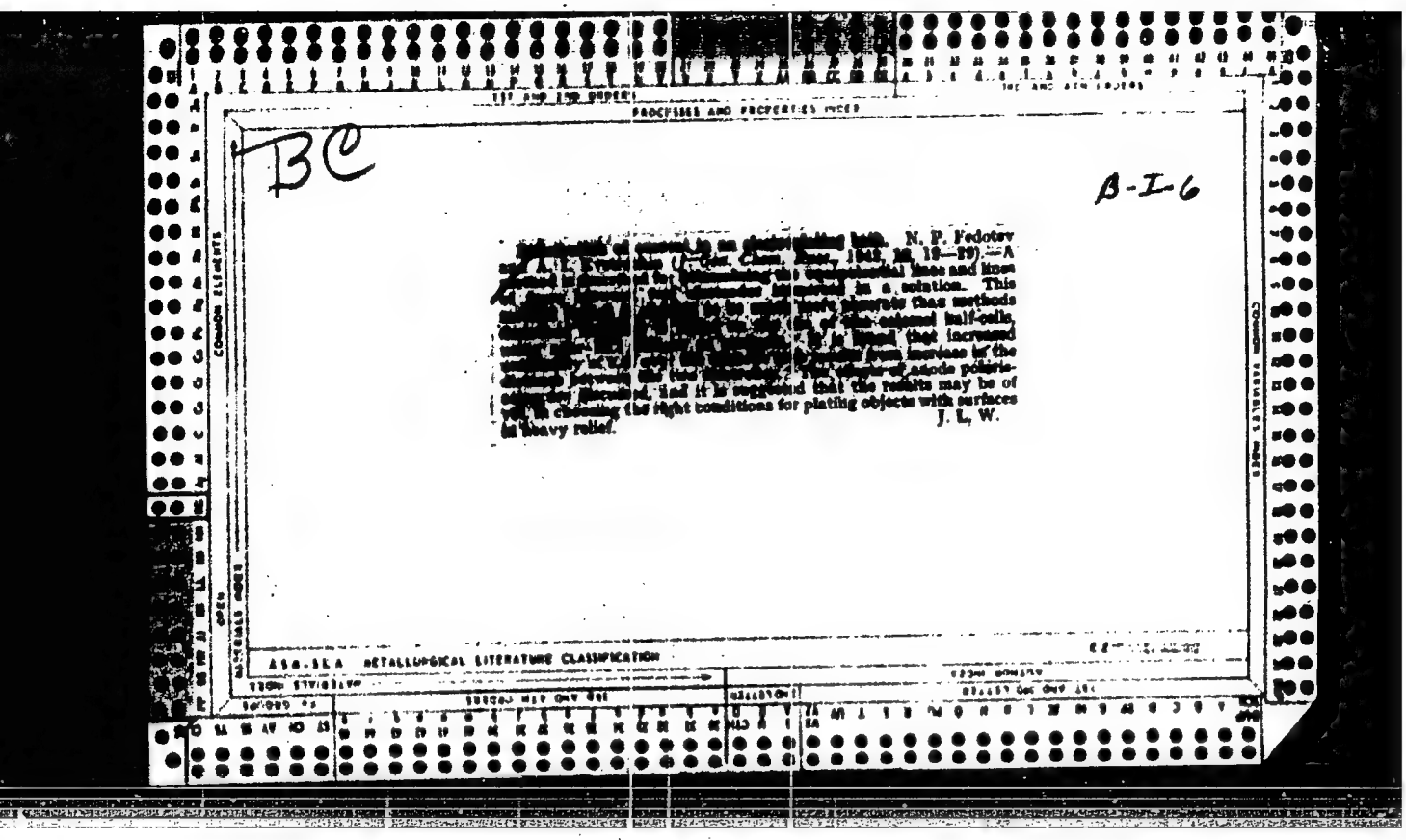
W. R. Henn



M

21

Electrolytic Polishing of Aluminium. B. P. Artamonov, N. P. Fedot'ev, and N. I. Razmetova (*Gosudarst. Inst. Prikladnoi Khim., Sbornik Statei, 1939–1939*, 1939, 200–202; *C. Abs.*, 1941, **35**, 1224).—[In Russian.] Electrochemical methods of surface treatment of aluminium, 99·5–99·7% pure, make it possible to increase the reflection factor to 80–83%, and also to increase the corrosion- and heat-resistance of the surface. Treatment of aluminium of this purity in Pullen electrolyte (Brit. Pat. 397,538) gave a reflection factor of 80–82% compared with 77% obtained by Pullen. By the American Alzac process the reflection factor was 81–82%, compared with 86% which is given in the patent literature. The lower values are due probably to the impurities in the aluminium used. The advantages and disadvantages of both processes are pointed out.

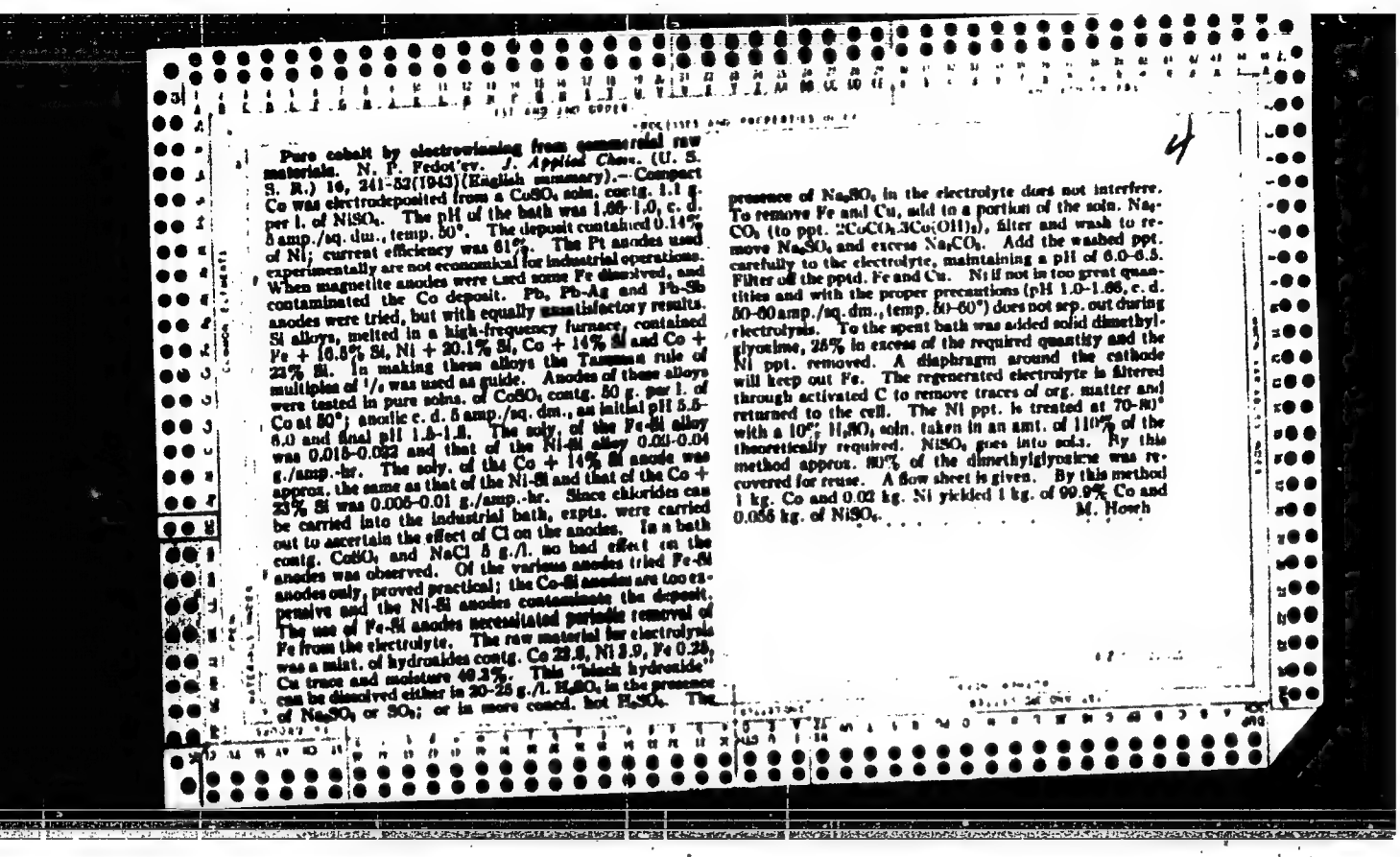


BC

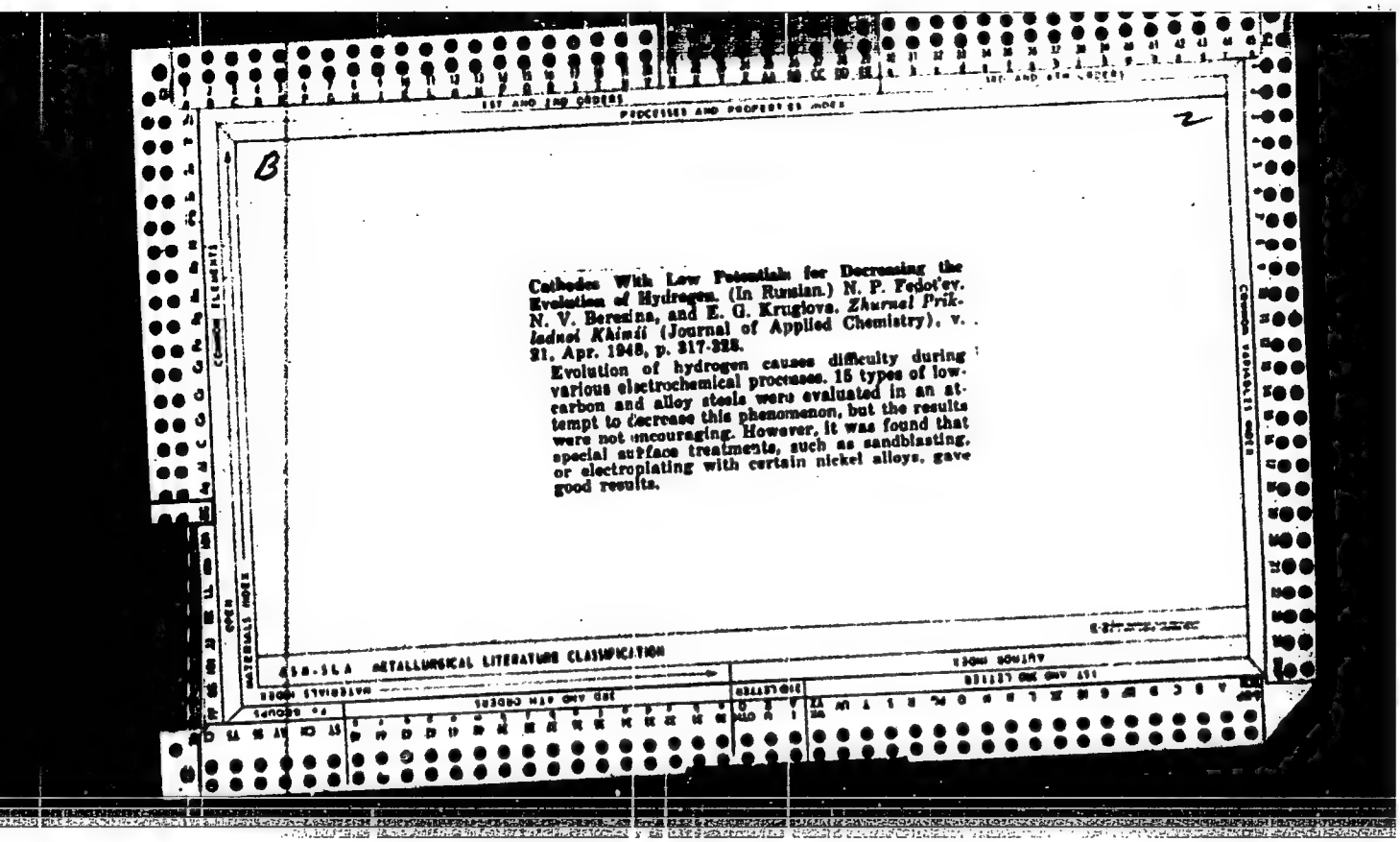
B-I-6

N. P. Fedotev

J. L. W.

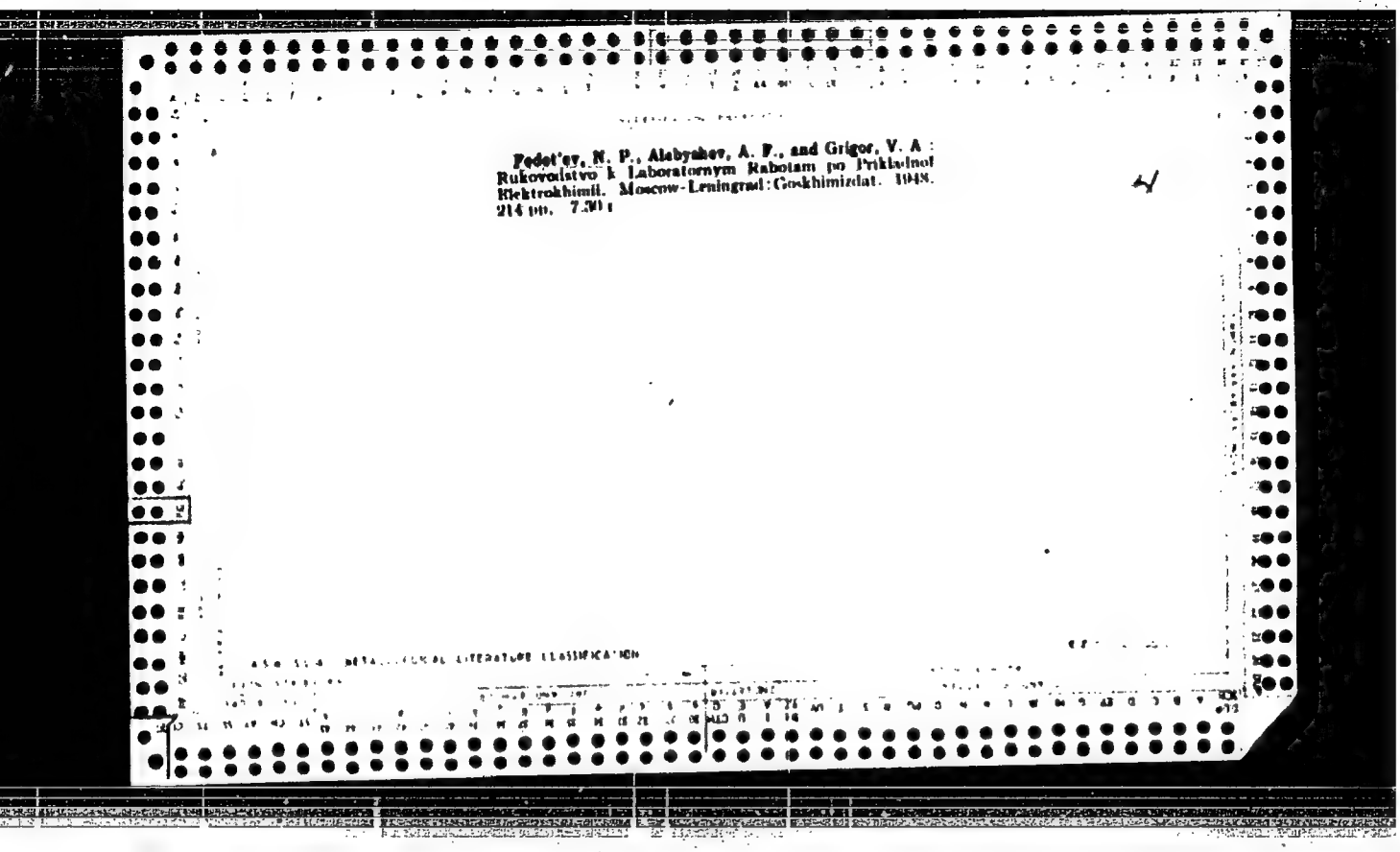


Pure cobalt by electrowinning from commercial raw materials. N. P. Fedot'ev. *J. Applied Chem.* (U. S. S. R.) 16, 241-52(1943)(English summary).—Compact Co was electrodeposited from a $CoSO_4$ soln. contg. 1.1 g. Co per l. of $NiSO_4$. The pH of the bath was 1.66-1.0, c. d. 5 amp./sq. dm., temp. 50°. The deposit contained 0.14% of Ni; current efficiency was 61%. The Pt anodes used experimentally are not economical for industrial operations. When magnetite anodes were used some Fe dissolved, and contaminated the Co deposit. Pb, Pb-Ag and Pb-Sb anodes were tried, but with equally unsatisfactory results. Si alloys, melted in a high-frequency furnace, contained Fe + 16.8% Si, Ni + 20.1% Si, Co + 14% Si and Co + 23% Si. In making these alloys the Tammann rule of multiples of 1/3 was used as guide. Anodes of these alloys were tested in pure solns. of $CoSO_4$ contg. 50 g. per l. of Co at 50°; anodic c. d. 5 amp./sq. dm., as initial pH 5.5-6.0 and final pH 1.5-1.8. The soly. of the Fe-Si alloy was 0.018-0.032 and that of the Ni-Si alloy 0.03-0.04 g./amp.-hr. The soly. of the Co + 14% Si anode was approx. the same as that of the Ni-Si and that of the Co + 23% Si was 0.006-0.01 g./amp.-hr. Since chlorides can be carried into the industrial bath, expts. were carried out to ascertain the effect of Cl on the anodes. In a bath contg. $CoSO_4$ and NaCl 5 g./l. no bad effect on the anodes was observed. Of the various anodes tried Fe-Si anodes only, proved practical; the Co-Si anodes are too expensive and the Ni-Si anodes contaminate the deposit. The use of Fe-Si anodes necessitated periodic removal of Fe from the electrolyte. The raw material for electrolysis was a mixt. of hydroxides contg. Co 23.8, Ni 3.9, Fe 0.28, Cu trace and moisture 40.2%. This "black hydroxide" can be dissolved either in 20-25 g./l. H_2SO_4 in the presence of Na_2SO_3 or SO_2; or in more concd. hot H_2SO_4. The presence of Na_2SO_3 in the electrolyte does not interfere. To remove Fe and Cu, add to a portion of the soln. Na_2CO_3 (to ppt. $2CoCO_3.3Co(OH)_2$), filter and wash to remove Na_2SO_4 and excess Na_2CO_3. Add the washed ppt. carefully to the electrolyte, maintaining a pH of 6.0-6.5. Filter off the pptd. Fe and Cu. Ni if not in too great quantities and with the proper precautions (pH 1.0-1.66, c. d. 50-60 amp./sq. dm., temp. 50-60°) does not sep. out during electrolysis. To the spent bath was added solid dimethylglyoxime, 25% in excess of the required quantity and the Ni ppt. removed. A diaphragm around the cathode will keep out Fe. The regenerated electrolyte is filtered through activated C to remove traces of org. matter and returned to the cell. The Ni ppt. is treated at 70-80° with a 10% H_2SO_4 soln. taken in an amt. of 110% of the theoretically required. $NiSO_4$ goes into soln. By this method approx. 80% of the dimethylglyoxime was recovered for reuse. A flow sheet is given. By this method 1 kg. Co and 0.02 kg. Ni yielded 1 kg. of 99.9% Co and 0.056 kg. of $NiSO_4$. M. Hoseh



Cathodes With Low Potentials for Decreasing the Evolution of Hydrogen. (In Russian.) N. P. Fedot'ev, N. V. Berezina, and E. G. Kruglova. *Zhurnal Prikladnoi Khimii* (Journal of Applied Chemistry), v. 21, Apr. 1948, p. 317-328.

Evolution of hydrogen causes difficulty during various electrochemical processes. 15 types of low-carbon and alloy steels were evaluated in an attempt to decrease this phenomenon, but the results were not encouraging. However, it was found that special surface treatments, such as sandblasting, or electroplating with certain nickel alloys, gave good results.



Fedot'ev, N. P., Alabyshev, A. F., and Grigor, V. A.:
Rukovodstvo k Laboratornym Rabotam po Prikladnoi
Elektrokhimii. Moscow-Leningrad: Goskhimizdat. 1948.
214 pp. 7.30 r

FEDOT'YEV, N. P.

PA 75T24

USSR/Chemistry - Electrolysis Apr 1948
Chemistry - Cathodes

"Cathodes With Reduced Hydrogen Liberation Potential," N. P. Fedot'yev, N. V. Berezina, Ye. G. Kruglova, Electrochem Lab, Leningrad Tech Inst, 12 pp

"Zhur Priklad Khimii" Vol XXI, No 4

Describes method which permits easy reduction of cathode potential. Studies of 15 common hydrocarbons and steel alloys did not give positive results in spite of wide variety of samples used. Attempts to determine proper method for preparing surfaces. Practical value of this series of experiments found

[redacted] 75T24

USSR/Chemistry - Electrolysis (Contd) Apr 1948

in possibility of determining length of operational use of a cathode under various operating conditions. Submitted 1 Oct 1947.

[redacted] 75T24

FEDOT'YEV, N. P.

USSR/Engineering May 48
Metallurgy
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"Collection of Works on Hydroelectrical Metallurgy of Nonferrous Metals Under the Editorship of V. Stenders and V. Ponomareva," N. P. Fedot'yev, 1 p

"Zhur Priklad Khimii" Vol XXI, No 5

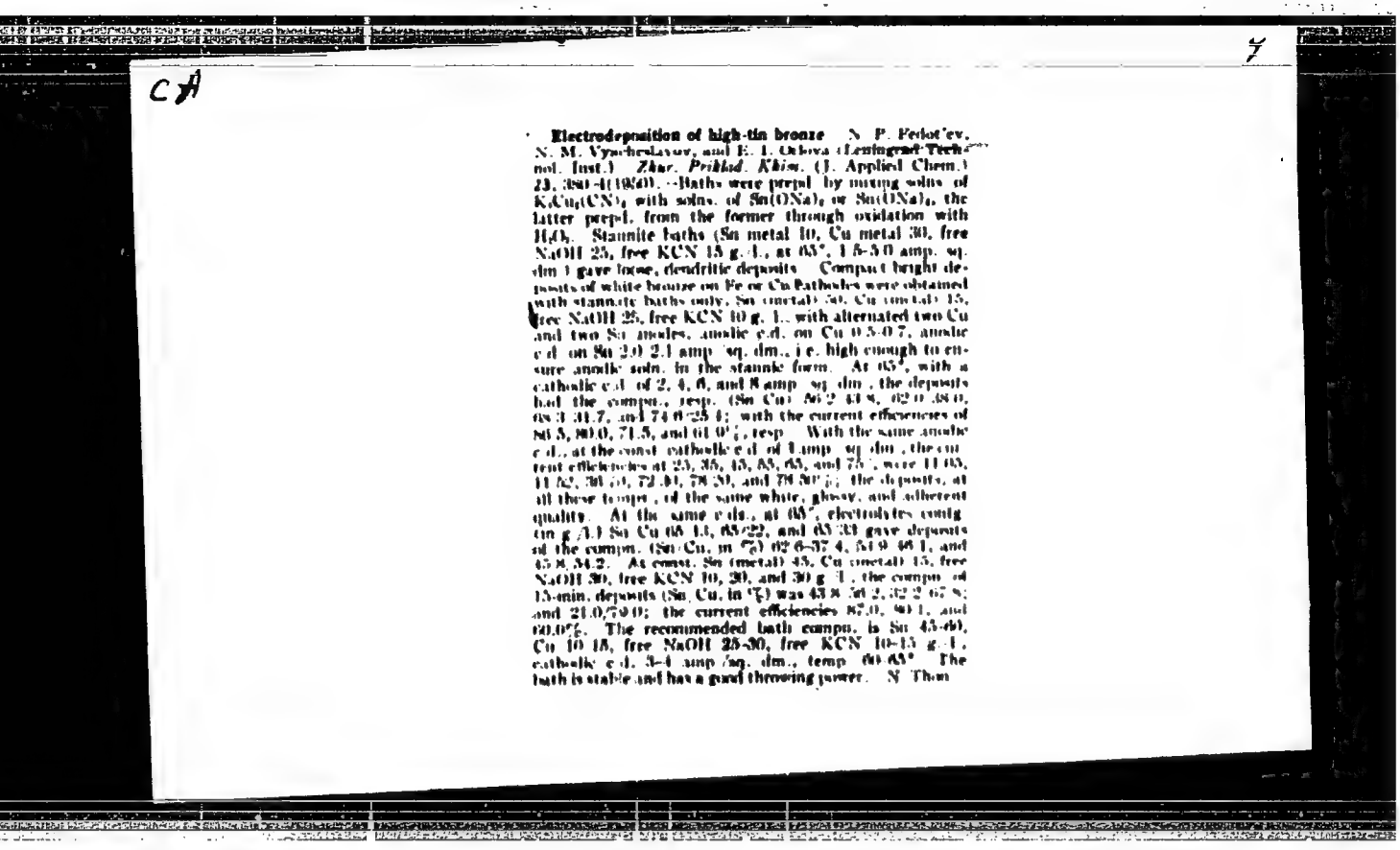
Collection appeared in "Iz Ak Nauk, Kazakh' SSR" No 34, 1947. Contains 14 separate articles. Favorably reviewed.

11/49T43

FEDOT'YEV, N. P.

32536. Rol' russk kh i tekhnikov v razvitii elektrokhimicheskoy promy shlennosti. Zhurnal prikl khimii, 1949, No 10, s. 1445-52.--Bibliogr: 10 nazv

SO: Letopis' Zhurnal'nykh Statey, Vol. 44, Moskva, 1949



7

CA

Electrodeposition of high-tin bronze. N. P. Fedot'ev, N. M. Vyacheslavov, and E. I. Ochova (Leningrad Technol. Inst.) *Zhur. Prikład. Khim.* (J. Applied Chem.) 13, 801-4 (1940).—Baths were prepd. by mixing solns. of $KCu_2(CN)_3$ with solns. of $Sn(ONa)_2$ or $Sn(ONa)_4$, the latter prepd. from the former through oxidation with H_2O_2. Stannite baths (Sn metal 10, Cu metal 30, free NaOH 25, free KCN 15 g./l., at 65°, 1.5-5.0 amp. sq. dm.) gave loose, dendritic deposits. Compact bright deposits of white bronze on Fe or Cu cathodes were obtained with stannate baths only. Sn (metal) 30, Cu (metal) 15, free NaOH 25, free KCN 10 g./l., with alternated two Cu and two Sn anodes, anodic c.d. on Cu 0.5-0.7, anodic c.d. on Sn 2.0-2.1 amp./sq. dm., i.e. high enough to ensure anodic soln. in the stannic form. At 65°, with a cathodic c.d. of 2, 4, 6, and 8 amp./sq. dm., the deposits had the compn., resp. (Sn:Cu) 86.2:13.8, 62.0:38.0, 68.3:31.7, and 74.6:25.4; with the current efficiencies of 80.5, 80.0, 71.5, and 61.0%, resp. With the same anodic c.d., at the const. cathodic c.d. of 1 amp./sq. dm., the current efficiencies at 25, 35, 45, 55, 65, and 75°, were 11.05, 11.52, 30.50, 72.01, 78.59, and 79.50%; the deposits, at all these temps., of the same white, glossy, and adherent quality. At the same c.d.s., at 65°, electrolytes containing g./l. Sn:Cu 65:1.1, 65:22, and 65:33 gave deposits of the compn. (Sn:Cu, in %) 92.6:37.4, 54.9:46.1, and 45.8:54.2. At const. Sn (metal) 45, Cu (metal) 15, free NaOH 30, free KCN 10, 20, and 30 g./l., the compn. of 15-min. deposits (Sn, Cu, in %) was 43.8:56.2, 32.2:67.8, and 21.0:79.0; the current efficiencies 87.0, 90.1, and 60.0%. The recommended bath compn. is Sn 45-60, Cu 10-15, free NaOH 25-30, free KCN 10-15 g./l., cathodic c.d. 3-4 amp./sq. dm., temp. 60-65°. The bath is stable and has a good throwing power. N. Thon

VAYNER, Ya.V., laureat Stalinskoy premii kandidat tekhnicheskikh nauk; DASOYAN, M.A., kandidat tekhnicheskikh nauk; DRINBERG, A.Ya., laureat Stalinskoy premii doktor tekhnicheskikh nauk, professor; TARASENKO, A.A., laureat Stalinskoy premii, inzhener; KHAIN, I.I., inzhener; BOGORAD, I.Ya., laureat Stalinskoy premii, kandidat tekhnicheskikh nauk, retsenzent; SNEDZE, A.A., kandidat tekhnicheskikh nauk, retsenzent; YAMPOL'SKIY, A.M., inzhener, retsenzent; TIKHOMIROV, A.A., inzhener, retsenzent; FEDOT'YEV, N.P., laureat Stalinskoy premii doktor tekhnicheskikh nauk, professor, redaktor; GUREVICH, Ye.S., kandidat tekhnicheskikh nauk, redaktor; DLUGOKAN-SKAYA, Ye.A., tekhnicheskiy redaktor

[Handbook on protective and decorative coatings] Spravochnik po zashchitno-dekorativnym pokrytiiam. Pod red. N.P.Fedot'eva. Moskva, Gos.nauchno-tekhn.izd-vo mashinostroit.lit-ry, 1951. 480 p. [Microfilm] (MLRA 10:7)

(Protective coatings)

FEDOT'YEV, N. P. and CRILIKHES, Ya.

"Electrochemical Processing of Metals," Nauka i zhizn', 19, No.9, 1952

FEDOT'YEV, N. P.

USSR/Chemistry - Electrodeposition Mar 52

"On the Question of the Electrodeposition of 'Black Nickel,'" N. P. Fedot'yev, P. M. Vyacheslavov, N.P. Gnusin, Chair of Electrochem, Leningrad Technol Inst imeni Lensoviet

"Zhur Prik Khim" Vol XXV, No 3, pp 322-324

Coatings with "black nickel" should be made in a bath contg 75 g/l $NiSO_4 \cdot 7H_2O$, 45 g/l $NiSO_4(NH_4)_2SO_4 \cdot 6H_2O$, 40 g/l $ZnSO_4 \cdot 7H_2O$, 15 g/l NH_4 CNS, and 25 g/l H_3BO_3 under the following conditions: temp 45-55°C; cd 0.2-1.3 amp/sq dm, pH of electrolyte 4.5 to 5.5. Nickel anodes are used for better adhesion

207T35

USSR/Chemistry - Electrodeposition (Contd) Mar 52

of the coating, an undercoating of nickel deposited by the customary process should 1st be applied and the "black nickel" deposition carried out with gradually increasing cd from 0.2 to 1.30 amp/sq dm. Process can be controlled on basis of a voltage from 0.8 to 2.0 v.

Translation 25-4467- 30 Dec 54

207T35

(3)

Electrodeposition of "black nickel". N. P. Fedot'ev, P. M. Vyacheslavov, and N. P. Gulsin. *J. Appl. Chem. U.S.S.R.* 25, 351-4(1952)(Engl. translation).—See *C.A.* 47, 9270d.

Chemical Abst.
Vol. 48 No. 9
May 10, 1954
Electrochemistry

FEDOT'YEV, N.P.

USSR

4

✓ Economy of nonferrous metals in electroforming. N. P. Fedot'ev, P. M. Vyacheslavov, and V. I. Zaikovn. *Inform.-Tekh. Listok Vsesoyuz. Obshchestva Rasprostran. Polit. i Nauch. Znanii, Leningrad. Dom Nauch.-Tekh. Propagandy* 1953, No. 14-472, 1-6; *Referat. Zhur. Khim.* 1954, No. 40168.—A discussion of replacing Cu with Fe in electroforming. The compn. of the bath for this process is $FeSO_4$ 180-200, NaCl 30-50, and $NaHCO_3$ 30 g./l. The pH is 6. At room temp. the c.d. is 0.2 amp./sq. dm. At 25-30° and upon addn. of sulfophenol or sulfonaphthol the c.d. is raised to 1 amp./sq. dm. Low-C steel anodes are used. Fe plating of graphitized wax matrices in such baths gives deposits of increased hardness and strong adhesion, particularly by applying a 20-30-μ sublayer in Cu. A chloride bath is less convenient for such work. Methods of controlling the electrolytes are described. M. Hosch

FEDOT'YEV, N. P.

USSR

Electrodeposition of gold plate of superior hardness. N. P. Fedot'yev, N. M. Ostrounova, and P. M. Vyachesl-avov. *J. Appl. Chem. U.S.S.R.* 27, 35-41(1954)(Engl. translation).—See *C.A.* 48, 6080e. H. L. H.

FEDOT'YEV, N. P.

Electrodeposition of Gold Coatings of Increased Hardness. N. P. Fedot'yev, N. M. Ostroumova, and P. M. Vyacheslavov [In Russian]. Zhur. Prikl. Khim., 1954, 27, (1), 43–50.—The edge-hardness (*H*) of Au deposits obtained from baths contg. (g./l.) Au 4, free KCN 16, K_2CO_3 up to 5, Ni 0·5–4·0 (present as cyanide), was determined. The cathodes were of polished sheet brass, 10 × 15 mm., and the anodes of Pt, situated 30 mm. from each side of the cathode. *H* increased on addn. of the Ni to the bath and on increasing the c.d. from 1 to 2 amp./dm.², but at 3 amp./dm.² a further increase was obtained only at the higher Ni contents. Tests at 42° and 70° C. showed that at the lower temp. *H* was greater but the deposit was much darker. Subsequent tests were generally made at 2 amp./dm.² and 70° C. *H* remained const. as the KCN concentration increased from 5·1 to 19·1 g./l., then fell slightly on further increase to 95·6 g./l. With a bath contg. (g./l.) Au 4, Ni 2, KCN 15, increasing the K_2CO_3 content from 4·9 to 103·4 g./l. had little effect on *H*. Increasing the Au concentration from 1 to 5 g./l. in a bath contg. 3·85 g. Ni/l. led to a fall in *H* from 190 to 152 kg./mm.². The wear-resistance (determined by the number of revolutions of a brass roller necessary to wear away a 2-μ-thick deposit under a load of 500 g.) of the Au–Ni deposits was 1·64 times greater than that of the Ni-free deposits. In a bath contg. (g./l.) Au 4, KCN 15, the current efficiency fell from 24·0 to 20·7% as the Ni content increased from 0·5 to 4·0 g./l. Increasing the Au concentration from 1 to 5% in a bath contg. (g./l.) Ni 3·85, KCN 17·9 increased the current efficiency from 7·7 to 22·1%. It fell from 26·2 to 12·1% as the KCN concentration increased from 8·8 to 50·8 g./l. in a bath contg. Au 4, Ni 2, K_2CO_3 7·5. A change in K_2CO_3 concentration from 4·9 to 103·4 g./l. caused the efficiency to fall from 22·5 to 13·0% for a bath contg. Au 4, KCN 12·5. Increasing the temp. from 16° to 70° C. in the case of a bath contg. Au 4, Ni 1·6, KCN 9·8 increased the efficiency from 16 to 22% at 2 amp./dm.². Changing the c.d. from 1 to 3 amp./dm.² had little effect on efficiency. Cathodic polarization curves were obtained for various baths. The recommended bath contains (g./l.) Au 4, Ni 2, free KCN 16, at 2 amp./dm.² and 70° C.

—G. V. E. T.

FEDOT'YEV, N.P.

4

USSR

Regeneration of solutions used in electropolishing of steel.
N. P. Fedot'ev, R. G. Kruglova, and S. Ya. Grilikhes. J.
Appl. Chem. U.S.S.R. 27, 147–53(1954)(Engl. translation).
—See C.A. 48, 8088d. H. L. H.

Regeneration of solutions used in electropolishing of steel. N. P. Fedot'ev, B. G. Kruglova, and S. Ya. Grilikhes. *Zhur. Prikhd. Khim.* 27, 157-65(1954).—It was shown experimentally that the loss of efficiency of solns. used in electropolishing of Fe was due to the accumulation of Cr_2O_3 at the cost of CrO_3 and that polishing ability was completely lost when Fe_2O_3 accumulated in excess of 7%. The effectiveness of the soln. was completely restored by the following steps in order: (a) reduction of CrO_3 to Cr_2O_3 at a Pb cathode at 20–25°, cathodic and anodic c.ds. being 0.5 and 2–5 amp./sq. dm., resp.; sp. gr. of the soln. should be 1.7, since higher sp. gr. lowered the rate of reduction and dilg. necessitated subsequent concg.; (b) reduction of Fe^{+++} to Fe^{++} at a Pb cathode with simultaneous pptn. of $FeSO_4$ at 70–80°, cathodic and anodic c.ds. being 0.5–1 and 5–10 amp./sq. dm. resp. and sp. gr. 1.6–1.75 (under these conditions, evapn. compensated for the drop in sp. gr. due to pptn. of $FeSO_4$, and lower soln. d. increased soly.; higher c.d. increased viscosity, thus decreasing rate of pptn.; lower temp. (10–25°) necessitated periodic concn. to bring up the d.); (c) addn. of acids and oxidation of Cr_2O_3 to CrO_3 at an anode of Pb coated with a film of PbO_2 at 20–25°, at cathodic and anodic c.ds. 5–10 and 3–5 amp./sq. dm., resp.; H_2SO_4 should be not less than 6%. Oxidation took place very poorly on Pt coated with PbO_2 and not at all on Pt.

J. Benecowitz

AID P - 2260

Subject : USSR/Chemistry

Card 1/1 Pub. 152 - 5/19

Authors : Fedot'yev, N. P. and N. N. Bibikov

Title : Electrolytic method of preparation of a solution of sodium stannate

Periodical: Zhur. prikl. khim., 28, no.2, 156-165, 1955

Abstract : Three variations of the process are described: use of a non-passivated anode and oxidation of Sn^{++} to Sn^{++++} on a tin cathode; 2. use of a non-passivated anode, and oxidation of Sn^{++} to Sn^{++++} on an insoluble cathode; 3. anodic dissolution of a passivated anode with stannate obtained in the anolyte.

Institution: Chair of Electrochemistry of the Leningrad Industrial Correspondence Institute

Submitted : N 20, 1953

FEDOT'YEV, N.P.

4

CH The effect of thickness on the structure and properties of electrodeposited metals. I. P. Fedot'ev, N. P. Gnusin, and P. M. Vyacheslavov. *J. Appl. Chem. U.S.S.R.* 28, 899–902 (1955) (Engl. translation).—See *C.A.* 50, 703/. B. M. R.

(2)

FEDOT'YEV, N. P.

AID P - 2281

Subject : USSR/Chemistry

Card 1/1 Pub. 152 - 7/21

Authors : Fedot'yev, N. P. and Ye. G. Kruglova

Title : Protection of silver mirrors by electroplating with copper

Periodical: Zhur. prikl. khim., 28, no.3, 275-284, 1955

Abstract : Addition of Seignette's salt to the electrolyte eliminates peeling off of the silver coating during electroplating with copper. The quality of the mirrors is not impaired by using a thinner silver coating which is supplemented by electroplating with copper. Four tables, 2 photos, 5 diagrams, 8 references (all Russian: 1937-1952).

Institution: Chair of Electrochemistry of the Leningrad Technological Institute (im. Lensovet)

Submitted : F 13, 1954

AID P - 3496

Subject : USSR/Chemistry

Card 1/1 Pub. 152 - 11/21

Authors : Fedot'yev, N. P., N. P. Gnusin, and P. M. Vyacheslavov

Title : Effect of layer thickness on the structure and properties of electrodeposited metals

Periodical : Zhur. prikl. khim., 28, 6, 634-637, 1955

Abstract : Grain size and microhardness of copper deposits and surface roughness of copper, zinc, and cadmium deposits were studied. With increase in the layer thickness, the microhardness decreases and the grain size increases. Five diagrams, 4 references, 3 Russian (1941-1953).

Institution : None

Submitted : Ja 25, 1954

FEDOT'YEV, N.P.

Electrochemical process of zinc stripping from galvanized iron shavings. N. P. Fedot'ev and G. G. Khazi-masn (Zh. Prikl. Khim. 1955, 28, ... 1112). The process involves four stages: (1) dissolution of the zinc from the shavings in aq. NaOH; (2) separating the electrolyte obtained; (3) recovery of the Zn by electrolysis using insol. anode; (4) remelting the cathode deposit. Temp. and alkali concn. do not affect the rate at which the Zn dissolves. E.g., increase in alkali concn. to 400 g/l at 50° the rate ... 1·5 mg/sq. dm., and at 80° with alkali ... 1·5 mg/sq. dm. ...

LFH

The degree of roughness of electrodeposited copper as a function of the conditions of electrolysis
and N. P. Fenin, *Zhur. Prikład.*
(1958); cf. C.A. 50, 7037f.—Roughness
Cu surfaces was measured in
plate ground to the sides
above the bottom. The cathode
compartment against
was continuously
and returned
the cathode was
detd.
of the deposit measured.
and the time of electrolysis).
cm./min. The coeff. of roughness
increased with
and concn. of
and 2.0%, resp
especially at low

FEDOT'YEV, N. P.

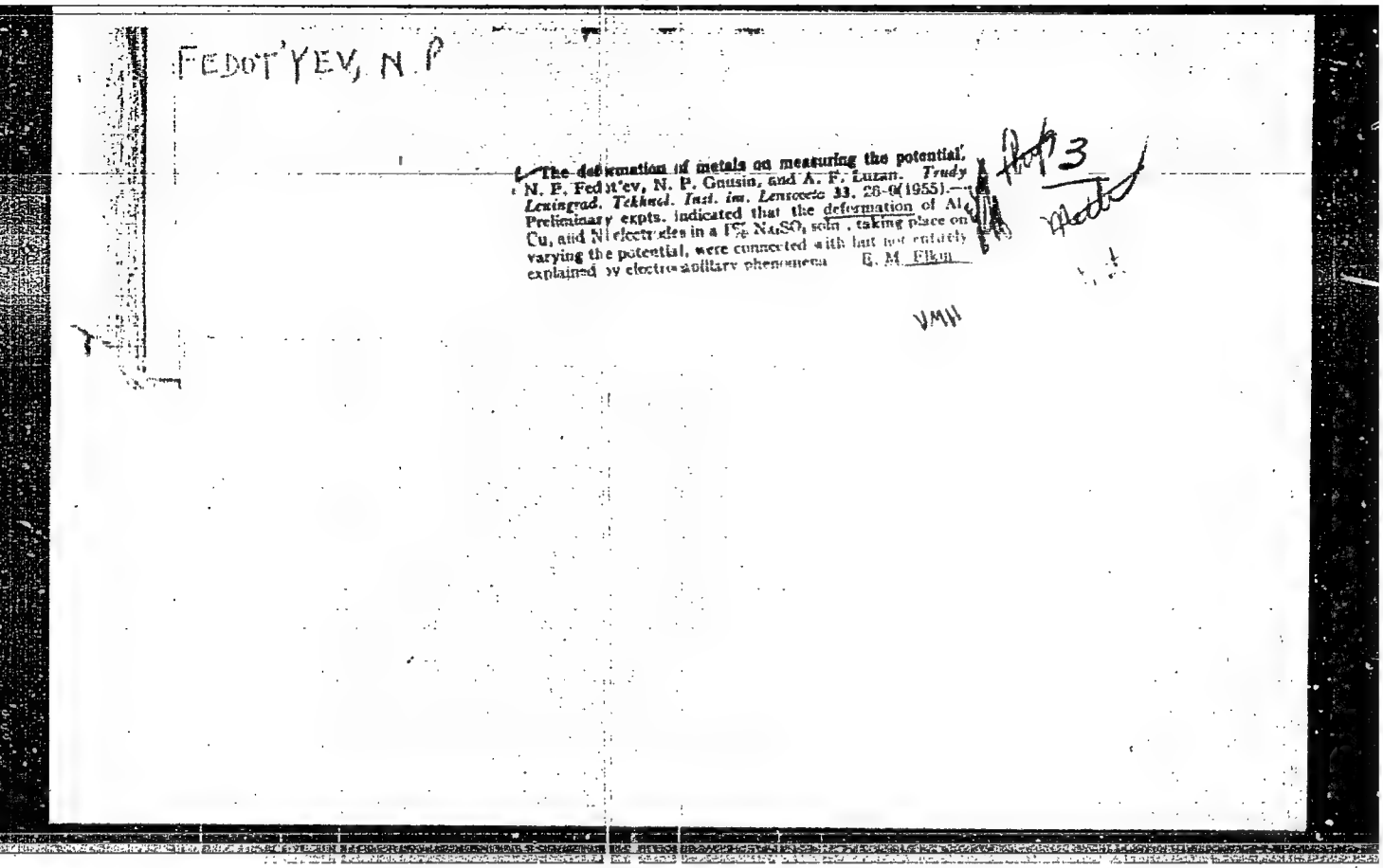
6

Chem

3

Electrochemical deposition of gold coatings of increased hardness. II. N. P. Fedot'ev, P. M. Vyacheslavov, and N. M. Ostroumova. *Trudy Leningrad. Tekhnol. Inst. im. Lensoveta* 33, 3-12(1955); cf. C.A. 49, 8100h.—Adding 10–12 g./l. Co to Au cyanide electrolyte increased the microhardness of the deposit by 80%, its wear resistance by 190%, and the rate of deposition of Au by 100%. The deposit contained no Co and its color was not affected. X-ray analysis showed that the crystal grain size was reduced from $\sim 10^{-4}$ to $\sim 10^{-5}$ cm. This accounted for the improved phys. qualities of the deposit. According to the suggested mechanism, the complex Co ions, adsorbed on electrodeposition, were only deformed by the elec. field, forming dipoles. This hindered the discharge of Au ions on preferred points and led to the formation of new crystn. centers and, hence, to the reduced size of the crystals. E. M. B.

PM



FEDOT'YEV, N.P

The deformation of metals on measuring the potential. N. P. Fedot'ev, N. P. Gnusin, and A. F. Luzan. *Trudy Leningrad. Tekhnol. Inst. im. Lensoveta* 33, 28-9(1955).—Preliminary expts. indicated that the deformation of Al, Cu, and Ni electrodes in a 1% Na_2SO_4 soln., taking place on varying the potential, were connected with but not entirely explained by electrocapillary phenomena. G. M. Flkin

VMH

FEDOT'YEV, N.P.

USSR/Chemical Technology. Chemical Products and Their Application. J-11
Electrochemical Manufactures. Electrical Precipitation.
Chemical Sources of Current.

Abs Jour: Referat Zh.-Kh., No 8, 1957, 27549

Author : N. P. Fedot'yev, Yu.M. Pozin.
Inst : Lensovet Institute of Technology, Leningrad.
Title : Study of Electrochemical Method of Lead Dioxide Preparation.

Orig Pub: Sb. stud. rabot. Leningr. takhnol. in-t im. Lensoveta. L., 1956, 59-62.

Abstract: The question of obtaining PbO_2 as a sufficiently solid and compact deposit on the anode was studied. PbO_2 was deposited on graphite and charcoal. An acid and an alkaline electrolytes were tested. Brittle and easily detachable from the anode deposits were produced from an alkaline electrolyte (40 g per lit of NaOH + 10.5 g per lit of Pb). Satisfactory deposits were produced at very low D_a-s (under 0.3 a/dm^2), which slowed down

Card : 1/2 -3-

USSR/Chemical Technology. Chemical Products and Their Application. J-11
Electrochemical Manufactures. Electrical Precipitation.
Chemical Sources of Current.

Abs Jour: Referat Zh.-Kh., No 8, 1957, 27549

the process very much. The best conditions of preparing PbO_2 from an acid electrolyte are: temperature - 18.5°, D_a - 5 a/dm^2, solution composition - 72 ml of H_2O, 25 g of $Pb(NO_3)_2$, 3 g of $Cu(NO_3)_2$ and 11% of VT-10), because the PbO_2 deposit contains great amounts of H_2O. VT is decreased with the rise of the temperature, D_a is decreased with the addition of $Al(NO_3)_3$. The deposit becomes gray and brittle with the temperature rise (to 30° and more). The minimum porosity of the deposit is at D_k = 5 a/dm^2. The produced PbO_2 deposits can be used instead of Pt anodes for electrolysis with resulting $(NH_4)_2S_2O_8$, which electrolysis is carried out in a strongly acid medium.

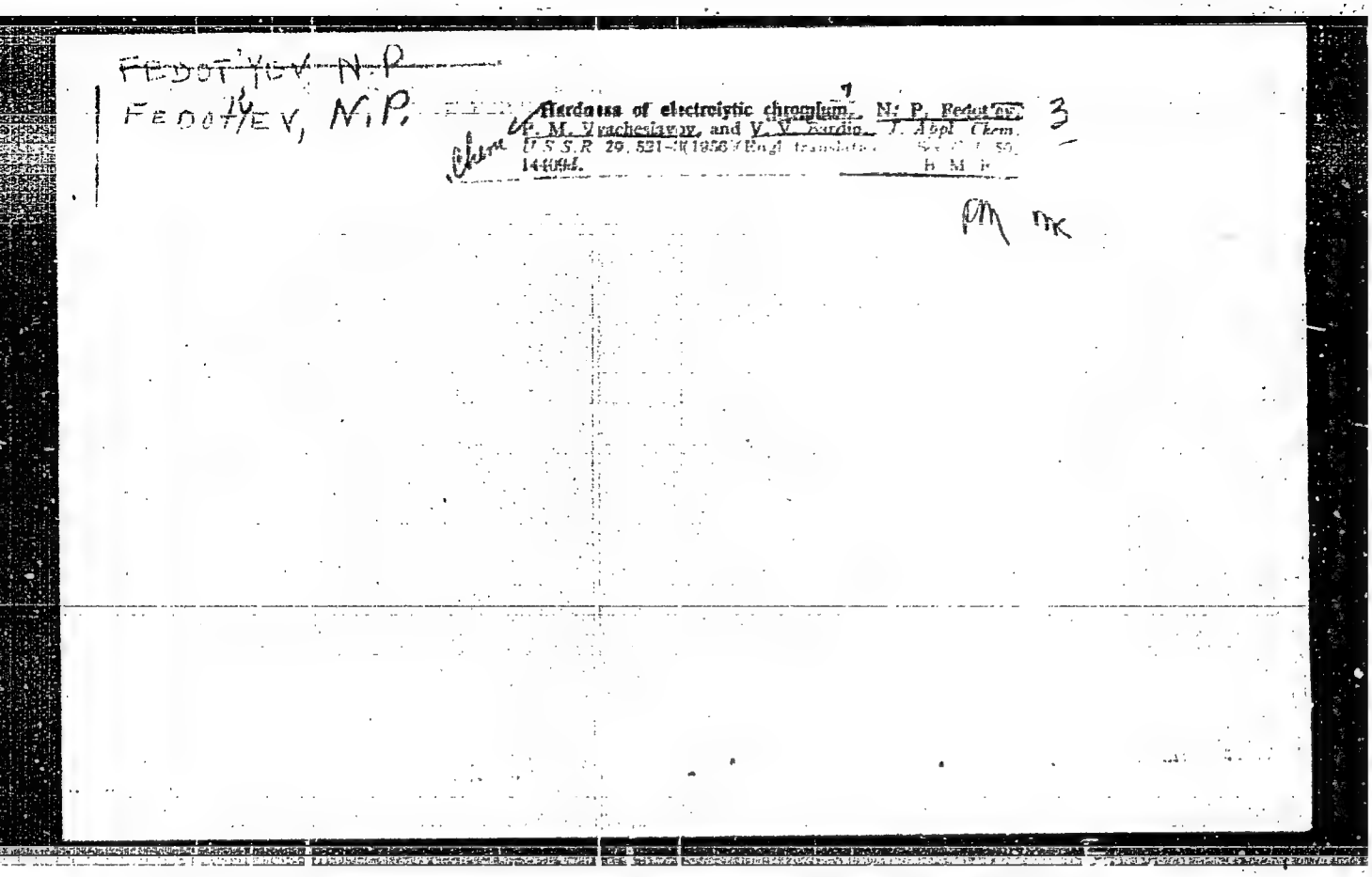
Card : 2/2 -4-

FEDOT'YEV, N.P.

5

Hardening of gold plating. N. P. Fedot'ev, N. M. Ostroumova and P. M. Vyacheslavov (J. Appl. Chem., 1950, 23, 189 - 1927). — On introduction of Co additives into gold electrolytes, micro hardening of gold plate increased 80% owing to decrease [illegible] deposits) wear-resistance increased threefold and [illegible] gold deposits increased twofold. [illegible] if the Co content was 8—14 g/l. the greatest [illegible] being obtained with c.d. = 2 amp./sq. dm. An plate from electrolytes containing 12 g./l. of Co, c.d. 0·14 and 2·00 amp./sq. dm contained no Co.

A. L. H.



FEDOT'YEV, N.P.

FEDOT'YEV, N.P.

Hardness of electrolytic chromium. N. P. Fedot'yev, P. M. Vyacheslavov, and V. V. Burdin. *J. Appl. Chem. U.S.S.R.* 29, 521–3(1956) (Engl. translation). 1440/61.

3

FEDOT'YEV, N.P

Chem

Hard electroplated gold. N. P Fedot'ev, N. M. Ostrou-
nova, and P. M. Vyacheslavov. *J. Appl. Chem. U.S.S.R.* 29, 537-40(1956)(English translation).—See *C.A.* 50, 14469*f*.
B. M. R.

FEDOTYEV, N.P

1

5

11-4E2 e

✓ Condition of the surface of steel during electrochemical polishing / [illegible] and S. [illegible]. The following [illegible] changes of [illegible] ing (a) The [illegible] study of [illegible] 50%) in [illegible] anodic potentials [illegible] an electrolyte [illegible] 14% with [illegible] anode exhibited [illegible] 1st knee a heating [illegible] 2nd knee O was liberated at the anode [illegible] counted only by the existence of a film at the anode acting as a barrier retarding the passage of anions. (b)

C steel was polished metallographically with 00 paper and then electrochemically as in (a) with i = 40 amp./sq. dm. The capacity C and the transient resistance R (cf. Skorchilletti, C.A. 47, 3302^{b}) of the double layer was detd. in N K_2SO_4. The values of C and R after mech. polishing were 60.8 microfarads/sq. cm. and 2.8 ohms sq. cm., respectively, whereas after electrochem. polishing the respective values were 38.0 and 23.4. This indicated the existence of an oxide film; this film was not sol. in H_2O nor in the electrolyte for 6 hrs. The film dissolved in the electrolyte in 5 min. Treatment with 10% NaOH at 70° lowered C and raised R. Apparently, hot NaOH solidified the film; a fact supported

by corrosion expts. (e) Substituting Cr_2O_3 in the electrolyte for CrO_3 gave a light gray dull surface with C = 115 microfarads/sq. cm. and R = 2.99 ohms/sq. cm., indicating a destruction of the film without CrO_3. The same type of film etching was observed at lower temps. [illegible] at 20 [illegible] 62.5 microfarads/sq. cm. and R = 14 [illegible] electropolished as in (5)). (f) C, R, and the reflective [illegible] Q of the polished surface were detd. [illegible] tion of polishing. During the 1st min. no effect was noted. At the beginning of the 2nd min. [illegible] dropped and [illegible] At the beginning of the 3rd min. [illegible] The curve of Q [illegible] was similar to that of R [illegible] and R were measured in the electrolyte used for electropolishing 0.25 m. after polishing was completed. C decreased and R increased. This indicated that the oxide film formed at the end of the 2nd knee of the i vs. E curve obtained in [illegible] This justified the assumption that the oxide film formed during electrolysis. I. Bencowitz

5
1 4ERC

RG
MT

FEDOT'YEV, Nikolay Pavlovich; ORILIKHES, Semen Yakovlevich; LAYNER, V.I., professor, retsenzent; KHEYFETS, B.L., kandidat khimicheskikh nauk, redaktor; VASIL'YEVA, V.P., redaktor izdatel'stva; POL'SKAYA, R.G., tekhnicheskiy redaktor

[Electrochemical pickling, polishing and oxidation of metals] Elektrokhimicheskoe travlenie, polirovanie i oksidirovanie metallov. Moskva, Gos. nauchno-tekhn. izd-vo mashinostroit. lit-ry, 1957. 242 p. (MLRA 10:5)
(Oxidation, Electrolytic) (Electrolytic polishing) (Metals--Pickling)

FEDOT'YEV, N.P.; VECHESLAVOV, P.M.; OSTROUMOVA, N.M.; GRILIKHES, S.Ya.

Increasing the durability of gold and silver plated coatings.
Leg.prom. 17 no.3:43-44 Mr 57. (MLRA 10:4)
(Gold plating) (Silver plating)

FEDOT'YEV, N.P.

ROTINYAN, A.L.; FEDOT'YEV, N.P.; MISHCHENKOVA, Ye.Ye.

Effect of conditions of electrolysis and electrolyte composition on the porosity of nickel platings. Zhur.prikl.khim. 30 no.5:716-723 My '57. (MIRA 10:10)

(Nickel plating) (Electrolysis)

FEDOT'YEV, N.P.; DMITRESHOVA, Z.I.

Examination of the electrolysis of nickel in chloride electrolytes.
Zhur.prikl.khim. 30 no.2:221-232 F '57. (MLRA 10:5)

1.Leningradskiy tekhnologicheskiy institut imeni Lensoveta.
(Nickel--Electrometallurgy)
(Electrolysis)

FEDOT'YEV, N.P.

7-4E2c

L 10245-67 (Russian) Dependence of the Anodic Potential of Steel on the Electrolyte Composition During Electrochemical Polishing. Zavisimost' anodnogo potentsiala stali ot sostava elektrolita pri elektrokhimicheskom polirovanii. N. P. Fedot'yev and S. Ia. Grilikhes. Zhurnal Prikladnoi Khimii v. 30 Feb. 1957, p. 193-201

Formation of salt and oxide layers determine the limits of current, as shown by curves of the anodic potential. The increase of the reflecting ability of steel anode as a function of temperature. Effect of Cr ions on electrochemical polishing

MT

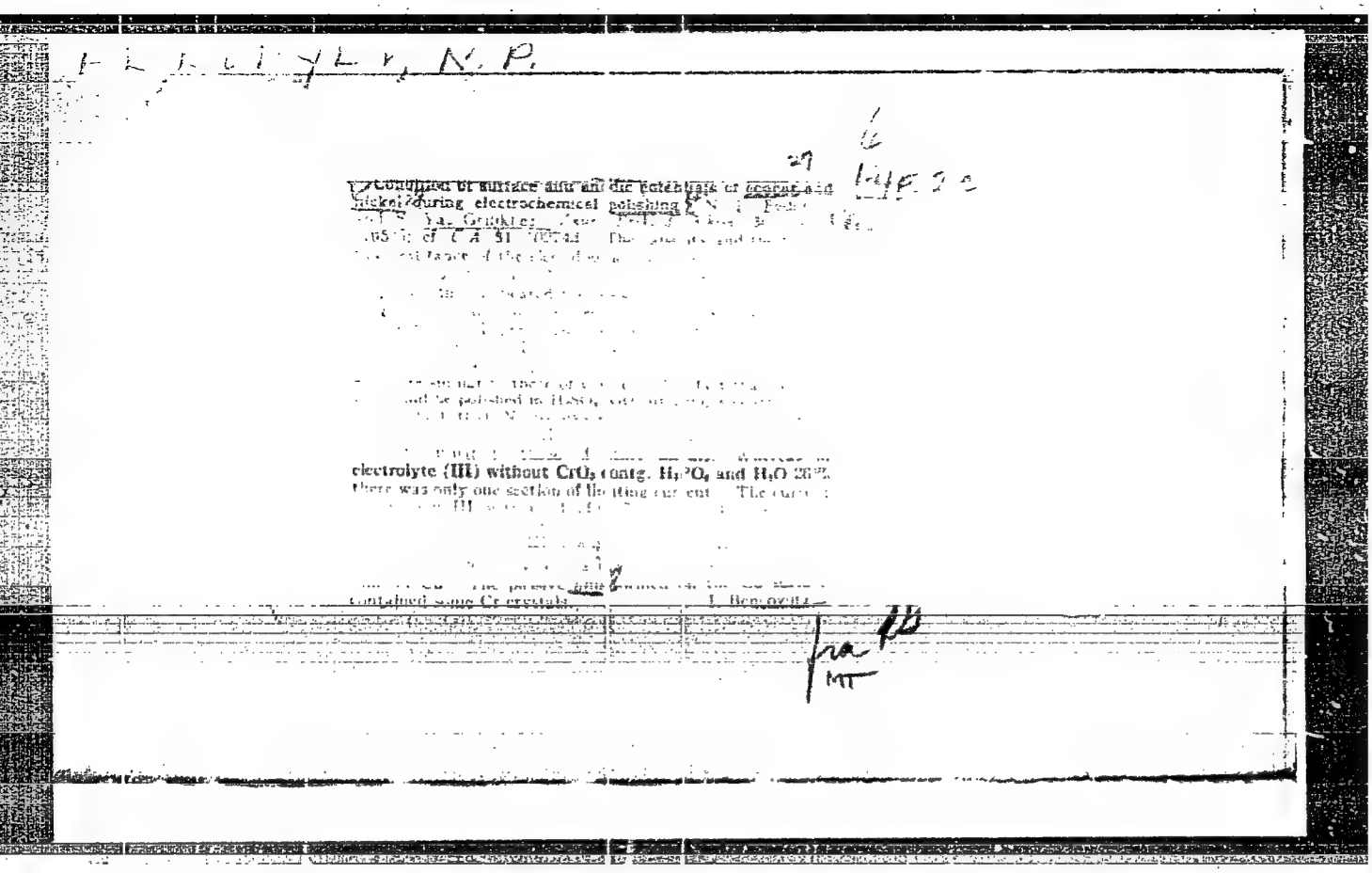
8

Mechanism of processes of electroforming of metals. S. Ya. Grilikhes and [illegible] 4E2C

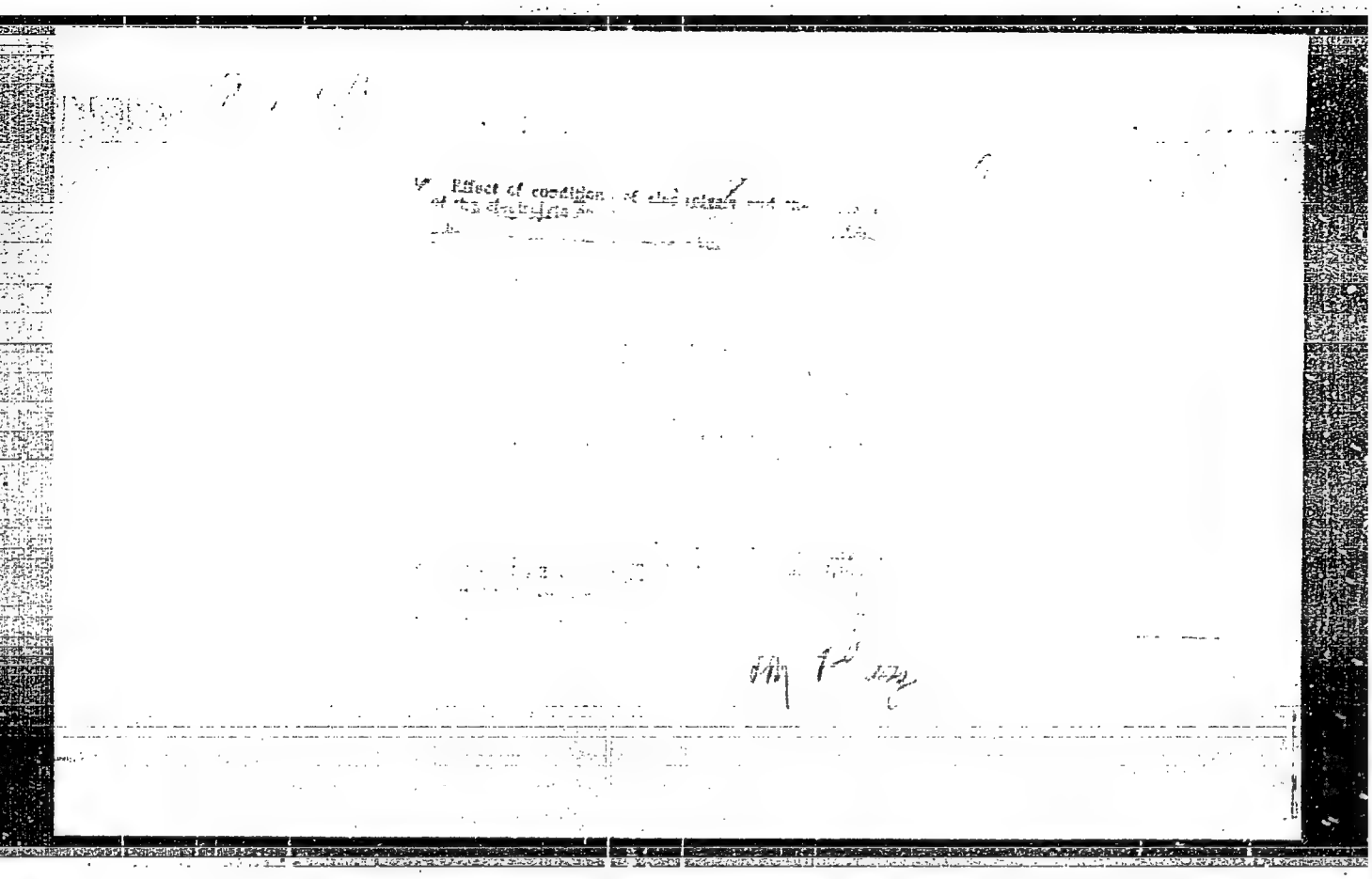
[illegible]

... with the exception that up to [illegible] of CrO_3 was [illegible] ... electrolyte. Within 10 min. the reflective power ... compared with that ... The [illegible] conc. of CrO_3 at which the passivation film formed and the anodic potential changed (cf. following abstr.). On the other hand the degree of smoothening of the surface remained const. and independent of the CrO_3 concn., whereas the reflective power of the surface increased from [illegible] to [illegible]. (c) One end of a [illegible]-steel plate ... was roughened with no. -100 emery paper ... and the other end as in (b) for 5 min. at [illegible]. The end treated as in (a) exhibited etching effects ... grain boundaries under a microscope; the surface was smooth but dull. The surface of the end treated as in (b) was smooth and bright; the passivation film prevented etching.

I. Bencowitz



electrolyte (III) without CrO_3 conig. H_3PO_4 and H_2O 20%



FEDOT'YEV, N. P.

Distr: 4E2j

The effects of current density, temperature, and sulfuric acid concentration on the hydrogen overvoltage on zinc. A. L. Rotinyan, N. P. Fedot'yev, and Sok-Li Un (Leningrad Ind. Technol., Leningrad). *Zhur. Fiz. Khim.* 31, 1265–8 (1957).—The H overvoltage in a H stn. was measured by using carefully purified H_2O, H_2SO_4, and Zn in 0.01 *N* acid solns. at 20, 40, 60, and 80°. At high c.d. of the polarizing current the overvoltage was linearly related to the c.d. but was independent of the acid concn. up to *N* H_2SO_4; it was lower at higher acid concns. The values of the angular coeffs. were $2.3RT/\alpha F$, where $\alpha = 0.5$, and was a const. independent of concn. and temps. The quant. data on acid concn. agreed with the theory of slow-ion discharge when $i_4 = i_1$, where i_4 is the strength of the cathode current ($i_c = i_1 + i_2 - i_3 - i_4$, where i_1 was the H^+-ion discharge current; i_3 the H^+-atom ionization current; i_2 and i_4 the corresponding values for the metal). When the polarizing c.d. dropped to below a certain value, the overvoltage dropped suddenly, reaching a value where the overvoltage became independent of the c.d. The sudden drop in overvoltage was at higher c.d. the higher the acid concn. and temp., and was explained by the start in the Zn dissoln. The rate of the Zn soln. increased as an exponential function of the H_2SO_4 activity, as demanded by the slow-ion-discharge theory. The const. of the soln. velocity increased exponentially with temp. The soln. activation energy was 4600 cal./mol. The theoretical slope of the lines was 35–41 v. when $i_c = i_1$, while the exptl. value was 25–30 v., an agreement which was considered satisfactory as a 1st approximation. W. M. Sternberg

FEDOT'YEV, N.P.

USSR / Physical Chemistry - Electrochemistry. B-12

Abs Jour : Referat. Zhurnal Khimiya, No.1, 1958, 571.

Author : V.M. Kochegarov, A.L. Rotinyan, N.P. Fedot'yev.

Inst : Lensovet Institute of Technology, Leningrad.

Title : Catode Polarization at Alloy Formation. Study of Co-Ni Alloys.

Orig Pub : Tr. Leningr. tekhnol. in-ta im. Lensoveta, 1957, vyp. 40, 112 - 123.

Abstract : The catode polarization (CP) at the simultaneous and the separate electrolytic precipitation (E) of Co and Ni was studied at various temperatures and various electrolyte concentrations. It is shown that in case of E from a mixed solution, the partial CP curves at Co precipitation shift to the positive side more sharply than in case of Ni precipi-

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USSR / Physical Chemistry - Electrochemistry. B-12

Abs Jour : Referat. Zhurnal Khimiya, No.1, 1958, 571.

Abstract : tation. The simultaneous precipitation of Co and Ni proceeds at tempreatures of 20 and 40° more difficultly than the separate one, and depolarization takes place at temperatures of 60 and 70°. It is surmised that depolarization is caused by the formation of a solid solution, and that superpolarization is caused by difficulties in the formation of an overall crystalline lattice. It is shown that the polarization at E of a Co-Ni alloy is determined for both components by the slowing down of the stage of ion discharge; the transfer ratios depend on the electrolyte concentration and rise together with the temperature.

Card: 2/2

FEDOT'YEV, N.P.

USSR / Physical Chemistry - Electrochemistry.

Abs Jour : Referat. Zhurnal Khimiya, No.1, 1958, 570.

Author : A.A. Khonikevich, N.P. Fedot'yev.

Inst : Lensovet Institute of Technology, Leningrad.

Title : Internal Stresses in Electrolytic Precipitations of Copper.

Orig Pub : Tr. Leningr. tekhnol. in-ta im. Lensoveta, 1957, vyp, 40, 133 - 142.

Abstract : The influence of an addition of colloid and surface tension lowering substance on the internal stresses (IS) in Cu, microhardness(MH) and the catode potential (CP) was studied. Cu was precipitated from the solution of 250 g per lit of $CuSO_4.5H_2O$ + 50 g per lit of H_2SO_5 at i = = 2 a per sq.inch and room temperature. The tension IS, MH and CP increase a little, if the dextrin concentration was increased, and

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USSR / Physical Chemistry - Electrochemistry. B-12

Abs Jour : Referat. Zhurnal Khimiya, No.1, 1958, 570.

Abstract : decrease after that. The dependence of IS on the gelatin (I) concentration passes through 2 maxima; MH rises monotonously with the rise of I concentration; the yield per current does not depend on I concentration. At the electolyse with reversed current, and at a I concentration under 0.2 g per lit, IS change in the same way, as in case of the forward current, after which they continue to rise instead of to drop (the 2nd maximum disappears). At the addition of thiourea (II) to the electrolyte, tensile IS attain a maximum of 8.1 kg per sq.mm at the concentration of II of 0.025 g per lit, and compressive IS appear at the concentration of II above 0.09 g per lit. MH rises monotonously with the rise of the concentration of II. The maximum of CP is at the concentration of II of 0.025 g per lit. Additions of Seignette's salt (III) (0.2 g per lit) alter the sign of IS in Cu; MH rises monotonously with the III

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USSR/ Physical Chemistry - Electrochemistry. B-12

Abs Jour : Referat. Zhurnal Khimiya, No.1, 1958, 570.

Abstract : concentration. When the current was reversed, the magnitude of IS is less, but the dependence on the concentration of the III addition remains. CP rises sharply at the addition of III. The change of the sign of IS in Cu at the rise of the concentration of II and III is explained by the inclusion of the addition into the electrolytic precipitate.

Card: 3/3

FEDOT'YEV, N.P.

USSR/Physical Chemistry - Electrochemistry. B-12

Abs Jour: Referat. Zhurnal Khimiya, No 3, 1958, 7300.

Author : N.N. Bibikov, N.P. Fedot'yev.
Inst : Lensovet Institute of Technology, Leningrad.
Title : Metal Deposition by Current of Varying Polarity.

Orig Pub: Tr. Leningr. tekhnol. in-ta im. Lensoveta, 1957, vyp. 40, 143-154.

Abstract: The parameter influence of currents of varying polarity (VP) on the upper limit of the working current density i, diffusing capacity and deposit properties was studied at the electrical precipitation of Cu from an acid electrolyte, of Zn from an acid and a zincate electrolytes, and Ni from a sulfate electrolyte. In the cases of processes proceeding with concentrated polarity, i increases with the duration of the period of the current direction exchange and with the ratio between the cathode and anode pulses t_c/t_a in close relation with the equation

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USSR/Physical Chemistry, Electrochemistry. B-12

Abs Jour: Referat. Zhurnal Khimiya, No 3, 1958, 7300.

deduced on the basis of diffusion kinetics regularities. This equation is not applicable to a process with prevailing electrochemical polarization (nickel plating). Low temperature, increased anode i and a considerable duration of the anode pulse contribute to the formation of a red powder-like Cu deposit. It is assumed that the cause of the formation of a spongy Zn deposit in the zincate solution at the electrolysis with CVP is the formation of little stable colloid $Zn(OH)_2$ forms in the layer adjacent to the anode. In the authors' opinion, the cause of property improvement of electrolytic deposits at the CVP electrolysis in processes proceeding with concentration polarization is not passivation (RZhKhim, 1956, 489), but activation of the electrode surface during the time of the anode polarization and the application of increased i.

Card : 2/2

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SOV/137-58-9-19598

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 9, p 210 (USSR)

AUTHORS: Fedot'yev, N.P., Grilikhes, S.Ya., Foroponova, N.L., ~~Yu Chen-Dya~~, Ventsel', I.

TITLE: Ornamental Finishing of Aluminum (Dekorativnaya otdelka alyuminiya)

PERIODICAL: Tr. Leningr. tekhnol. in-ta im. Lensoveta, 1957, Nr 43, pp 38-42

ABSTRACT: A method for ornamental finishing of Al by means of its electrochemical oxidation followed by adsorption coloring of the oxide film is described. The operations of the industrial process of coloring Al golden are examined. The importance of conducting the chemical and electrochemical polishing of the metal before the oxidation and the correct selection of the coloring agents is emphasized. The compositions of solutions for the chemical and electrochemical polishing, the working conditions, and the comparative characteristics of the operation are adduced. Mixtures of alizarin red and mordant true yellow is recommended for the coloring. Depending upon the ratio of their concentrations in the solution it is possible to tint the oxide films the color of pure gold and of its alloys with Cu and Ag. R.S.

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1. Aluminum--Processing 2. Aluminum--Oxidation 3. Aluminum--Color 4. Copper--Applications 5. Silver--Applications

VYACHESLAVOV, Petr Mikhaylovich, dots., kand. khim. nauk; FEDOT'YEV, N.P., prof., doktor khim. nauk, retsenzent; GRILIKHES, S.Ya., kand. tekhn. nauk, red.; YAMPOL'SKIY, A.M., inzh., red.; SIMONOVSKIY, N.Z., red. izd-va; SOKOLOVA, L.V., tekhn. red.

[Alloy plating] Gal'vanicheskie pokrytiia splavami. Moskva, Gos. nauchno-tekhn. izd-vo mashinostroit. lit-ry, 1958. 37 p. (Biblio-techka gal'vanotekhnika, no.7). (MIRA 11:9)
(Electroplating)

FEDOT'YEV, N.P.; POZIN, Yu.M.

Influence of the surface active substances on the mechanical properties of electrolytic deposits. Zhur.prikl. khim. 31 no.3: 419-424 Mr '58. (MIRA 11:4)
(Surface active agents) (Electroplating)

FEDOT'YEV, N.P.; VARYPAYEV, V.N.

Behavior of nitrate ion on Pt anode. Zhur. prikl.khim. 31 no.3: 434-440 Mr '58. (MIRA 11:4)
(Platinum) (Nitrates)

FEDOT'YEV, N.P.; KOSHA-SHOMODI, I.

Solubility rate of the oxide film on aluminum. Zhur.prikl. khim. 31 no.3:497-500 Mr '58. (MIRA 11:4)
(Aluminum oxides) (Solubility)

5(4) SOV/76-32-11-8/32

AUTHORS: Li Un Sok, Rotinyan, A. L., Fedot'yev, N. P.

TITLE: On the Problem of the Overvoltage in the Separation of Hydrogen on Zinc (K voprosu o perenapryazhenii pri vydelenii vodoroda na tsinke)

PERIODICAL: Zhurnal fizicheskoy khimii, 1958, Vol 32, Nr 11, pp 2514-2517 (USSR)

ABSTRACT: It was already shown (Ref 1) that diagrams of the overvoltage of hydrogen on zinc consist of three parts. At low current densities the polarization curve takes a course parallel to the abscissa, then a rather steep increase of the overvoltage follows, and finally a part that exactly corresponds to the table equation. Experiments carried out with chemically pure zinc at 20°C in 0.05 N sulfuric acid experimentally proved the assumption that at low current densities (Fig 1) the current of the spontaneous decomposition of the zinc cathode determines the course of the overvoltage curve. Investigations at current densities of up to 0.7 Ampere/cm^2 showed that in the case of sufficiently acid electrolytes (sulfuric acid above 1.0 N) the table equation with a theoretical curve inclination of

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On the Problem of the Overvoltage in the Separation of Hydrogen on Zinc

2.3 RT/0.5 F may be used. The size of the true surface exerts a considerable influence on the overvoltage, as it was shown by an anodically polished zinc of the type Ts-O (Fig 2). The activation energy of the discharge of the hydrogen ions at the equilibrium potential is calculated according to an equation (Refs 2,3) (17.93 kcal/gram molecule). The values of the current exchange of hydrogen on the zinc electrode were calculated (Table 1) and the function of lg i versus $\frac{1}{T}$ was represented (Fig 3). There are 3 figures, 2 tables, and 3 Soviet references.

ASSOCIATION: Tekhnologicheskiy institut im. Lensoveta, Leningrad
(Technological Institute imeni Lensovet, Leningrad)

SUBMITTED: April 26, 1957

VARYPAYEV, V.N.; FEDOT'YEV, N.P.

Study of electrodeposition of lead dioxide. Trudy LTI no.46:103-112 '58. (MIRA 14:4)

(Lead oxide)

FEDOT'YEV, N.P.; POZIN, Yu.M.

Effect of 2,6- and 2,7-naphthalenedisulfonic acid on the properties of electrolytic nickel. Trudy LTI no.46:162-169 '58. (MIRA 14:4)
(Nickel plating) (Naphthalenedisulfonic acid)

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A006/A001

Translation from: Referativnyy zhurnal, Khimiya, 1960, No. 19, p. 338, # 78027

AUTHORS: Fedot'yev, N. P., Vyacheslavov, P. M., Luzan, M. D.

TITLE: Electrochemical Deposition of High-Hardness Silver Coatings

PERIODICAL: Tr. Leningr. tekhnol. in-ta im. Lensoveta, 1959, No. 53, pp. 54-63

TEXT: The effect of admixtures, such as $K_2Ni(CN)_4$ and $K_3Co(CN)_6$, and of current pulsation on the hardness and wear resistance of Ag coatings was studied on an electrolyte of the following composition (in g/l): Ag_{met} 26, KCN_{free} 20, K_2CO_3 30 at T = 20 ± 0.5°C. At D_{cath} = 0.2 - 0.3 amp/dm^2 an increase in Ni concentration from 0.5 to 14 g/l causes higher microhardness of the deposit, raising from 90 to 120 kg/mm^2; this is explained by the formation of a solid Ag/Ni solution. At D_{cath} = 0.5 - 1.5 amp/dm^2, microhardness begins to decrease which is explained by the joint discharge of hydrogen ions; as a result a loose deposit with a reduced hardness is formed. A decrease in the Ag concentration in the electrolyte at D_{cath} = 1 amp/dm^2 entails a reduction in hardness of the deposit. This is connected with the drop of current efficiency and the formation

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Electrochemical Deposition of High-Hardness Silver Coatings

of a loose deposit. At a thickness of the deposit of $< 50\mu$, hardness decreases due to the coarsening of the crystal size. A higher KCN content raised from 5 to 100 g/l or K_2CO_3 from 10 to 100 g/l, causes a slight decrease in the hardness of Ag coatings. When 0.2 - 0.8 g/l Co is added to the electrolyte, the same regularities are observed as by the addition of Ni. However, Co does not enter the deposit and its effect is explained by adsorption on the electrode surface of stable $Co(CN)_6^{3-}$ complexes, which causes a reduced size of the deposit grains. Investigations with pulsating current showed that the latter raises microhardness by 15 - 20%. It is established that Ni admixtures shift the polarization curve toward the side of more negative values by 0.01 v and admixtures of Co by 0.4 v. All the curves have inflection points at D_{cath} = 1.1 - 1.2 amp/dm^2, which corresponds to the onset of hydrogen separation. The following composition of silver-plating electrolyte is recommended (in g/l): Ag 26 - 30; Co 0.8 - 1 (or Ni 0.4 - 0.5), KCN_{free} 15 - 25; K_2CO_3 20 - 40; D_{cath} = 0.8 - 1 amp/dm^2; D_{anode} = 0.4 - 0.5 amp/dm^2, temperature 18 - 25°C, current efficiency on the cathode = 95%. In this case the microhardness of Ag coatings is 1.4 - 1.5 times higher than that produced from an electrolyte without Ni or Co admixtures. R. Bek.

Translator's note: This is the full translation of the original Russian abstract.

Card 2/2

ALABYSHEV, A.F.; GRACHEV, K.Ya.; ZARETSKIY, S.A.; LANTRATOV, M.F.; FEDOT'YEV, N.P., prof., retsenzent; KHAIN, P.O., inzh., retsenzent; MORACHEVSKIY, A.G., red.; ERLIKH, Ye.Ya., tekhn.red.

[Sodium and potassium; their preparation, properties, and uses] Natrii i kalii; poluchenie, svoistva, primenenie. Pod red. A.F. Alabyasheva. Leningrad, Gos.nauchno-tekhn.izd-vo khim.lit-ry, 1959. 390 p. (MIRA 13:3)
(Sodium) (Potassium)

28 (5)

AUTHORS: Fedot'yev, N. P., Vyacheslavov, P. M., Yudilevich, S. R.

SOV/32-25-6-32/53

TITLE: Measurement of the Porosity of Chromium Coatings According to the Method of Mercury Compression (Izmereniye poristosti khromovykh pokrytiy metodom vdavlivaniya rtuti)

PERIODICAL: Zavodskaya Laboratoriya, 1959, Vol 25, Nr 6, pp 739-740 (USSR)

ABSTRACT: The porosity of chromium coatings was in the present case investigated by the method of mercury compression by means of a pore gauge (Ref 3). This method permits the determination of the volume of pores with a radius of from 350000 to several Ångström. The pore measuring device is a massive steel cylinder into which the glass dilatometer with the sample is put. The dilatometer is filled with mercury, next the cylinder is exposed to pressure (the pore measuring device PA-5 allows a pressure of 5000 kg/cm^2). Mercury penetrates into the pores of the sample under pressure and the change in volume in the dilatometer is determined by means of the variation of the electric resistance of a calibrated platinum wire. Cylinders of steel St. 2, electrolytically coated with

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Measurement of the Porosity of Chromium Coatings According to the Method of Mercury Compression

SOV/32-25-6-32/53

chromium are used as samples. Before the actual measurement a blank measurement is made on not chromed samples. The measurements carried out by V. F. Karel'skaya (Table 1) show that the maximum operational pressure necessary for the filling of the pores with mercury does not exceed 400 kg/cm^2. A change in electrolysis temperature of from 36 to 66° leads to a reduction of the volume of pores. The latter was also found by other methods (Table 2). There are 2 tables and 4 Soviet references.

ASSOCIATION: Leningradskiy tekhnologicheskiy institut im. Lensoveta (Leningrad Technological Institute imeni Lensovet)

Card 2/2

5(2, 4) SOV/80-32-5-44/52

AUTHORS: Fedot'yev, N.P., Vyacheslavov, P.M., Kruglova, Ye.G., Grilikhes, S.Ya.

TITLE: The Corrosion-Resistance of Some Galvanic Alloys Under Tropical-Like Conditions

PERIODICAL: Zhurnal prikladnoy khimii, 1959, Vol 32, Nr 5, pp 1165-1167 (USSR)

ABSTRACT: Binary and ternary alloys are used for preparing protective coating on metals by the galvanic method. The coatings were tested in a heat and moisture chamber imitating tropical conditions. Zinc and zinc-tin coatings were passivated by a mixture consisting of 3 g/l sodium dichromate, 10 g/l caustic soda, 5 g/l OP-10 (polyethyleneglycolic ether). The temperature of the solution was 90 - 95°C, the duration 5 - 10 sec. The coatings were applied to carbon steel St3. The corrosion-resistance decreases in the following order: passivated zinc-cadmium alloy (83% Cd), passivated cadmium, passivated tin-zinc alloy (20% Zn), passivated tin-cadmium alloy (60 - 40% Cd), copper-tin alloy (40 - 75% Sn), copper (38 - 78%)-tin (18 - 52%)-zinc (3 - 10%) alloy, copper (37 - 53%)-tin (27 - 35%)-cadmium (9 - 26%) alloy non-passivated zinc and cadmium.

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The Corrosion-Resistance of Some Galvanic Alloys Under Tropical-Like Conditions SOV/80-32-5-44/52

There are 7 references, 4 of which are Soviet, 2 English and 1 German.

SUBMITTED: September 19, 1958

Card 2/2

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75669
SOV/80-32-10-18/51

AUTHORS: Fedot'yev, N. P., Vyacheslavov, P. M., Kruglova, Ye. G., Andreyeva, G. P.

TITLE: The Technique of Electrochemical Deposition of Cobalt-Tungsten Alloy and Its Properties

PERIODICAL: Zhurnal prikladnoy khimii, 1959, Vol 32, Nr 10, pp 2235-2242 (USSR)

ABSTRACT: The authors' studies showed that the electroplating with Co-W alloys proceeded much better in an electrolyte composed of W, Co, $(NH_4)_2SO_4$, and 25% solution of NH_4OH than in electrolytes based on citric acid and potassium sodium tartrate recommended by other investigators. The composition of the deposit depended chiefly on the ratio of the concentration of component metals in the electrolyte. The tungsten content in the deposit increased with increasing W/Co ratio, and the yield based on current decreased. The tungsten content in the deposit increased with increasing concentration of $(NH_4)SO_4$ and

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The Technique of Electrochemical Deposition of Cobalt-Tungsten Alloy and Its Properties

75669
SOV/80-32-10-18/51

the quality of the deposit improved. The value of the NH_4OH concentration did not affect the composition but only the quality of the deposit, which became darker and finally black at a concentration of 140 g/l. The same effect was shown by NaOH. It was also found that the tungsten content in the deposit increased with increasing current density. The optimal conditions for depositing Co-W alloy with 35% W content are: electrolyte composition, W 12 g/l; Co 4 g/l; $(NH_4)_2SO_4$ 250 to 300 g/l; 25% NH_4OH solution 30 to 40 g/l; NaOH 10 g/l; current density 8 to 12 amp/dm^2; temperature 50 to 60°; anodes: platinum or tungsten. The hardness of the deposit can be increased almost twofold by a heat treatment at 600° for 1 hr. The hardness was thus raised from 500-700 kg/mm^2 to a maximum of about 1,000 kg/mm^2. Abrasion resistance of Co-W deposit on nickel was considerably higher than that of silver deposit on nickel. A very high abrasion resistance was shown by Co-W

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